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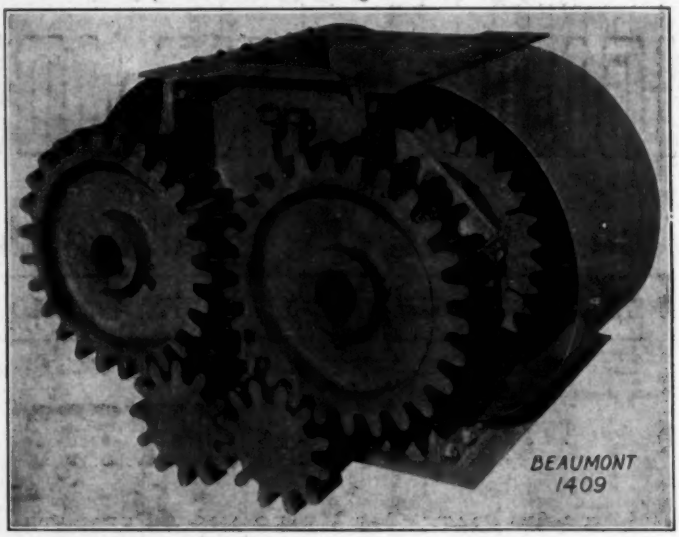


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AMERICAN
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Vol. CX, No. 7 NEW YORK, FEBRUARY 15, 1919 Whole No. 3180

# Even Though at First Thought Gas May Seem a Dry Subject to the Layman, the Gas Educational Lecturer Can Find Enough of the Colorful and Dramatic Not Only to Attract, but to Hold Audiences

## Inception of the Idea of Toronto — Not Only a Local Field, but an Eager Welcome Accorded Throughout Canada and in United States Cities as Well

By GEORGE W. ALLEN
Advertising Manager Consumers Gas Company of Toronto, Toronto, Ont.

In the year 1913, having charge of the educational class work among the employees of the Consumers' Gas Company of Toronto, and feeling the need of some pictures or views to better illustrate the process of gas manufacture to my students, I induced the company to purchase a set of gas manufacture lantern slides from a firm in England, and to also secure a stereopticon lantern for illustrating them.

The slides purchased were very interesting but did not illustrate to my satisfaction the process of gas manufacture as carried on in this country, besides many of the slides illustrated facts and figures a little too foreign for the general public in this country, so it was necessary to gather photographs, views, pictures and data that would be quite plain to the employee of the average gas company, and to the citizens in general, and from these pictures new lantern slides were made.

This revision of the English lecture took some time, for it was necessary to make a careful review of many text books on gas manufacture, catalogues, historical volumes on mines and mining, as well as arranging for the taking of a number of local views of our own gas works, before an interesting story could be made up. However, after a large collection of historical and other illustrations had been obtained, new slides were made up and put into chronological order with the result that the Toronto company now has the most complete list of lantern slides on gas and kindred subjects of any other gas company to my knowledge in the world.

The first lecture to be delivered outside the company was given shortly after the new lecture was completed, and it was given to the students of the chemical class of the Toronto Technical High School. It proved an eye-opener to most of the students in attendance, as it opened up to them on a large scale what they were studying in a small way.

### Eagerness for Such Lectures

The news of the lecture soon got abroad and it was not long before other associations were asking to have an opportunity of hearing it. This gave me the idea of making it an educational talk of general interest to the people, and caused me to feel that here was an opportunity for some educational work along gas industry lines that ought not to be neglected. I thereupon wrote the secretaries of numerous clubs, associations, lodges, colleges, etc., telling them about this interesting lecture, and giving a short synopsis of what it contained, such as: Early vegetable plant life from which coal was made in the course of time; coal mining scenes, showing how coal is mined; fossils and plants found in coal seams; ancient forests painted by imaginative artists from fossil plant remains; how the first attempts were made to extract gas from coal; interesting early historical facts regarding Murdoch's clay pipe experiments; early gas inventors and their appliances; early days with the first gas manufacturing works; troubles of the early gas company manager; the first process of making gas on a large scale; the layout of a small town gas works; how one man usually did, and sometimes now does, all the work connected with the manufacture of gas in small town gas works;

other products besides gas which are obtained from coal through gas manufacture; how tar is extracted; how ammonia and sulphur are taken out of gas before the gas can be sold; views showing the placing of coal in retorts in small and large gas works; how the coal and coke is now handled in large works; how coke helps to relieve the fuel situation; views showing the thousands of poor children who call at the Toronto Gas Works daily for their supply of coke; the chemical analysis of coke and coal; the great fuel problem and how gas companies are relieving the situation; the great waste of coal; Toronto's coal importations and how much of it goes to waste (illustrated by comparative charts, towers, streets full of coal, etc.); this is followed by the hidden wonders of a lump of coal—the wonderful dyes, medicines, aromatic oils, perfumes, explosives, ammonia products, sulphur products, motor car fuels, flavoring extracts, etc., etc.—some three thousand or more. From the hidden wonders of coal a story is told that impresses the audience with the importance of a gas company to a community and proving that gas companies are the only real conservators of coal in the country.

### No Trouble Getting Bookings

The response to the letters sent out was very gratifying, quite a number of secretaries asking that they be given the privilege of hearing the talks and that they be allowed to add the lecture to their fall and winter programs.

These lectures were given entirely free. I was not paid by the company for the time spent on these lectures, which were usually given in the evenings. I and my assistant considered the experience gained in the lecture field was ample payment for the time given, although the company later on appreciated the work we were doing in the aid of the industry.

During the years 1916 and 1917, I got into direct touch with the principals of various public and private schools, requesting that their pupils be given the benefit of this educational lecture, which was at this time entitled "The Story of a Lump of Coal." Over forty principals accepted the invitation and almost all of them arranged to have the lecture delivered in the school auditoriums, in the afternoons between 3.00 and 4.00 p. m., this being at a time when most of the school's work was completed for the day.

### Can School Children Be Interested?

Some schools had so many pupils attending that it was found impractical to deliver the lecture to all pupils at one time, and arrangements were made to take one-third or one-half of the children one day and the other children at later dates.

It might be well to mention that each lecture would usually begin with one of the national patriotic songs and end with the national anthem; other interesting items of interest would be interspersed throughout the talks.

Some principals and teachers made the lecture the basis of an examination, and many splendid essays, worthy of publication, were written by the school children.

Any new business manager will find an investment in a lantern and in the purchase of slides money well spent, provided, however, he takes upon himself the work of delivering the lectures, which he will find not hard to do. When I look back and remember how crude my first efforts at lecturing were, I can but smile, yet still feel that it was all for the good, for as long as one has a lot of good pictures to show it will mean half the battle.

Nowhere have I received anything but a rousing welcome and many repeat calls have been the result.

The lectures are revised to suit each individual audience, and it is always advisable to add interest to the talks by speaking in travelogue style. There are a number of local meeting halls already equipped with lantern apparatus, doing away with the necessity of carrying one's own lantern and screen.

### Helping to Be Helped

The man who wants to make good at this work needs to be one who will endeavor to be of real assistance to the associations he comes in contact with. If he tells the directors of clubs, halls, associations, young people's meetings and school people that he has something entirely free from the appearance of being an advertising scheme which they ought to have, he will not have difficulty in arranging for meetings for its deliverance. I would be safe in guaranteeing any gas company situated in the average-sized town, a full series of meetings throughout the winter months, provided I was out for this kind of business, showing how readily people take to the lecture.

Some associations print big announcements about the lecture, and in numerous instances have sold tickets for admission. In some cases the "Story of a Lump of Coal" lecture follows a regular entertainment program.

On the platform at each lecture is placed a table on which a pyramid of coal is built. This helps to focus the attention of the audience and enables the lecturer to pick up a few pieces when forcefully impressing on the mind of an audience the value of such dirty, black substance to the community. I sometimes express it this way:

"You have seen me show the long illustrated list of wonderful substances obtainable from this black, dirty material called coal, but to look at the substance you would hardly credit it, would you? Then, why should we as a people go on wasting it as we do? Why should we shovel it into our furnaces and fires as if it had no value? Ask yourself these questions, and say to yourself and to others too, how long are we going to stand for it? A great big part of our fuel question will be solved as soon as people realize the economic value of our gas companies to the nation, and wake up to insist that only gas be used for all cooking and heating operations."

People like to see pictures and illustrations that illustrate what one is trying to say, and if one speaks in a simple, everyday language, there will be no difficulty in holding an audience.

### No Age Limitations to Interest

I have personally for over an hour held the attention of an audience of above six hundred people with ages varying from five years old up to seventy years, and have rarely had a disturbing element, showing it is

possible to keep the attention of all in attendance if the lecture is made up of real interesting and diversified subjects throughout. My "Story of a Lump of Coal" lecture is composed of about 150 lantern slides, most of them being beautifully colored.

It is earnestly hoped that the information here given may be the means of stimulating other progressive gas men to doing some of the same kind of work in their own towns, not only to create local interest in gas and coal subjects, but to help the gas industry as a whole.

Other lectures are entitled:

"The History, Manufacture and Development of Gas," being a more technical revision of the "Story of a Lump of Coal," and suitable for chemistry classes, technical schools and societies, etc.

"A Trip through the New Welsbach Mantle Factory," fully illustrated, also including demonstrating material.

"Doing Things, or How to be a Success in Business," a real story of personal accomplishment in business.

"One Hundred Ways to Save Gas in the Home," one of the latest lectures, showing the many little leaks that cause big gas bills, and telling how to remedy them.

The lecture on gas saving is very popular at domestic science classes, mothers' meetings, cookery demonstrations, etc., and is, we have reason to believe, the only lecture of its kind on the continent. It also contains numerous lantern illustrations, and uses considerable demonstrating material. The lecture usually lasts about two hours.

## The One Unanswerable Argument Against Public Ownership the Verdict of the Battlefields of Europe

"The German Empire, government controlled and owned; 92 per cent of the railroads of that country owned by the government; the telephones and telegraph likewise; the banks, government agencies, industries under government thumb or in government partnership, the finest and most efficient industrial organization the world ever saw, producing the most scientific war machine known in history, but a paternal rule that made its people mere working machines, barbaric and unfeeling.

"I turn to America: Her railways and her telephones and her telegraphs and her industries not governmental, but individual. If her policy did not produce as great efficiency as Germany, it made real men and women, fine characters, recognized their obligations to their fellow men, and when the efficient war machine of the German government controlled empire met the free, unfettered individualism of America, the German machine went down to defeat and individual America triumphed!

"The one unanswerable argument of the world against government ownership is the verdict of the battlefields of Europe in favor of the American flag. And yet some people honestly are advocating that we revise the policy that made us great, and adopt the policy of the nation that we have denounced as barbaric and uncivilized.

"They forget that wealth does not consist of things, but of brains. The wealth of New York lies not in its harbors, or its buildings, or its lands, or its street railways, but in the brains of its people. If to-night all of the residents should leave and never return, New York, as a deserted city would not be worth even the tax-gatherer's attention, because its wealth would have departed with its departing citizens.

"Individual enterprise pioneered the railroad systems of America. These railroad pioneers blazed the way through the wilderness and the plains, and added millions to the country's wealth and prosperity in the cities and towns and factories and farms that sprang into being at their touch.

"They achieved this with a capitalization of $40,000 per mile, as against $109,000 in Germany, $139,000 in France and $275,000 in Great Britain. They paid the highest wages, and, on the whole, charged the lowest traffic rates in the world, and on a capitalization of about one-third of the average capitalization of Great Britain and France and Germany, they moved over our roads a traffic density practically twice that of the countries mentioned.

### American System Wins

"In the parallel between the government owned roads of Europe and the individual owned roads of America, the individual owned roads of America beat the government owned roads of Europe practically two to one in every phase of the question.

"Government ownership in any phase is a menace to democracy. It is autocracy enthroned. It could delay and hinder the transportation of the goods of the manufacturer or the merchant opposed politically to the party that happened to be in power. It could lose the newspapers that criticised it on their way to their readers, and in the hands of a fourth-rate politician it could reduce this country to industrial slavery where the people dared only to obey like that which made Germany a menace of the world."—*Ex-Governor E. C. Stokes of New Jersey.*

## In Operation of Die Casting, Gas Fuel Improves Product

A recently invented die casting machine operated by gas and electricity is securing remarkable results in the improvement of the product, the cheapening of it and in quantity increase. The machine is a vertical cast iron crucible in which the metal is melted by a gas fire. The method customarily employed demands that the resultant molten mass shall be forced into the die below the crucible by means of compressed air. In the gas burning machine the products of combustion are made to take the place of the air blast. This is accomplished by leading the waste from the flue through a water bath to a compressor where it is squeezed into the requisite atomic pressure and then directed to the top of the crucible.

The vital difference between gas and air in this sort of employment lies in the fact that air carries oxygen whereas that element is absent from the gas. Just what this means is illustrated in the behavior of aluminum treated in the machine.

If air is injected into this metal while the latter is in a molten state the effect is to solidify it quickly. The aluminum is simply oxidized. Oxygen being as stated, absent in the gas blast, no change occurs in the fluidity of the aluminum. Oxidation or the danger of it, is also recognized as a factor always in melting brass

and several soft or alloyed metals preliminary to their shaping in a die press. By using gas as the compressing medium there is an avoidance of the danger of this liability and a bettering of the product. As to aluminum particularly it is said no such finished work has been possible hitherto as that obtained by the process described.

The die in the machine is operated by an electric motor. Thus far the product is limited to castings weighing not above fifteen pounds. But it is expected this size will be exceeded and parts of dimensions required in automobiles for example, will be made. Sand molds for cores are not needed. The work of ten men is done by one and the whole manufacturing operation is quickened.

An important improvement has been made in the gas burning crucible type of brass melting furnace brought around by the utilization of waste combustion products of the gas fuel itself. In the operation of this furnace a mixture of gas and air makes up the fuel. It has been found by making a comparatively simple change in the intake system it becomes possible to preheat the air used in fuel mixture. The effect is to produce a marked decrease in the consumption of gas. Also a decrease in labor is obtained.—*Public Service Lumen.*

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# Describes Method Whereby Predetermined Pressures Can Be Maintained by Clockwork

**Mac D. Dexter Perfects Device Wherein Additional Pressure Is Produced by Pneumatic Means Controlled by Varying the Seal of a Dip Pipe**

Artificial gas is usually distributed under low pressures, the average being less than 2 oz. per square inch; the unit of measurement, however, is inches of water column. Pressures are controlled by a simple balanced valve suspended by a diaphragm or float connecting with the outlet side of the gas main. Such a form of governor maintains a uniform pressure at the outlet regardless of the fluctuating inlet pressure.

The location of the governor is generally at the outlet of the gas holder, but in some cities there are governors in outlying districts supplied by separate lines from the gas plant.

It is evident that with a uniform pressure at these points of distribution there will be a drop in pressure due to friction when gas is being consumed, the greatest drop being at points most distant and during peaks. In order to minimize this loss it is necessary to increase the pressure at the points of distribution, the amount of pressure increase being determined from pressure observations taken at different points of the distribution system.

There have been only two methods of accomplishing these pressure increases during peaks, one by adding weights to the diaphragm or float of the governor by hand, and the other by automatic means of adding weights, usually in the form of mercury.

## Objections to Control by Hand

The objections to control by hand are the time and attention necessary to accomplish the desired changes, sudden increases or decreases being undesirable.

The objections to the automatic methods are that in many cases two governors are necessary, one to maintain a uniform pressure at the inlet of the automatic governor; this necessitates additional investment and also reduces through friction the maximum pressure possible to carry. Skill is required to regulate and adjust some of these for changed conditions, and in some cases it is still necessary to control the pressures by hand.

Heretofore there has not been perfected a simple and reliable method whereby predetermined pressures could be maintaind by clockwork. The method described by Mac D. Dexter in the January Stone & Webster *Journal* was invented by the writer and application has been made for United States and foreign patents.

The additional pressure is produced by pneumatic means, and this is controlled by varying the seal of a dip pipe, which principle is well understood by all familiar with this feature of the hydraulic main, only in this case the dip pipe is the moving element and not the liquid level. The method of operation will be understood by reference to the accompanying drawing, which illustrates a governor with a diaphragm 7, balanced by weights 10 to deliver the minimum pressure to be carried. A very small supply of gas regulated by the needle-valve passes through the flexible tube 13 and tube 14 attached to the lever, and escapes from the open-ended dip pipe normally just above the liquid 16. A branch from this tube connects with the enclosed space above the diaphragm of the governor; but since the gas escapes into the atmosphere, there is no additional pressure upon the upper side of the diaphragm and the governor continues to deliver the minimum pressure.

## Depressions in Pasteboard Disc Determine Time of Increase or Decrease in Pressure

The lever is supported by a roller resting upon the outer edge of a pasteboard disc placed back of the regular chart of a twenty-four recording gauge. Now, if depressions are cut in the outer edge of this disc the lever is lowered by gravity and the dip pipe is submerged in the liquid, which causes a pressure to build up in the pipe line in proportion to the depth of seal, which pressure is transmitted to the diaphragm, causing additional pressure to be delivered by the governor.

The angle of depressions in the pasteboard cam disc determines the time in effecting an increase or decrease in pressure, and the depth of the depressions the amount of increase. It is evident that with a pasteboard disc printed with radial lines for time and circumferential lines for pressure a disc can be cut so as to reproduce any curve of pressure selected to be carried throughout the twenty-four hours.

## Has Been in Use Two Years.

Although the amount of gas required is very small, means for venting this gas from the room are provided by surrounding the dip pipe with a larger tube 32 and a flexible tube 34. The thumb-nut 39 and screw-threads 36 furnish a convenient means of raising the liquid receptacle for obtaining a very fine adjustment.

The drawings illustrate the principles of operation. After using this means of pressure control for nearly two years, it has been determined to use mercury for the liquid and a slightly different form of lever.

The advantages claimed for this clockwork or selec-

Fig. 1.

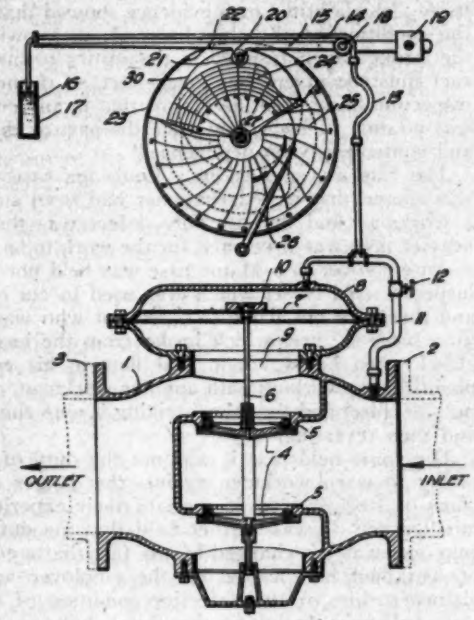
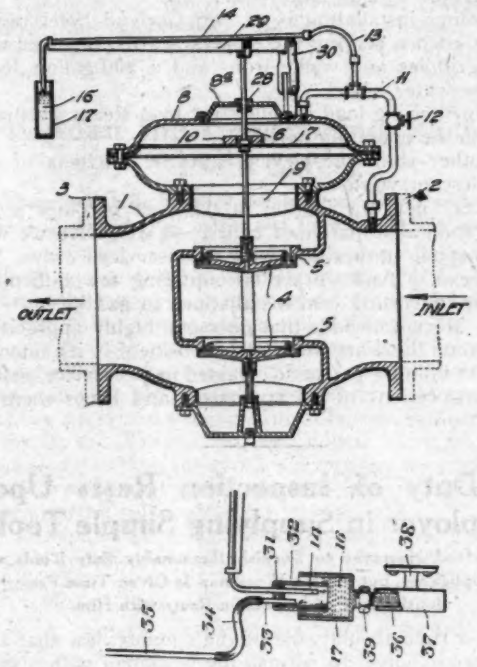



Fig. 2.




tive service pressure control are that it is inexpensive to install, being applicable to governors already in service, either of the balance or automatic types, even the purchase of an additional recording gauge being unnecessary. The gauge and control apparatus can be any reasonable distance from the governor and can be applied to either district or station governors. By this system it is possible to carry the pressures that are determined to be best suited from pressure records taken from different parts of the distribution system, and to best take care of industrial loads between peaks in the day-time. On days of large send-out these increased pressures can be still increased by raising the level of the mercury by means of the thumb-screw adjustment. It is possible to give the best service by giving the needed pressures and at the same time to keep the mean average pressure down so as to keep the unaccounted-for gas at a minimum.

## Army Post at Atlanta Equals Gas Consumption of Small City

From nothing at all at the beginning of the war, when the laying of the College Park main past the gates of Fort McPherson had just been finished, to a business bigger than the gas consumption of many a small city, the use of gas on the Government's military reservation just south of Atlanta has grown and continues to grow bigger and bigger. Uncle Sam has become far and away the largest customer of the Atlanta Gas Light Company.

What then was a space occupied by fighting men in one stage or another of training has become now a vast plant for nothing but the reconstruction of fighting men brought back wounded or sick. Building after building has been added, till now the population of General Hospital No. 6 is somewhere around 5,000. And still they come.

Twenty-five hundred men are fed from the main kitchen there. Within a few days the gas company's sales department, under Innis H. Morehead, Jr., will have completed the installation in that kitchen of its complete re-equipment with gas, and this big additional load will have been added to the service now rendered by the College Park main.

The third of three service mains entering the reservation is now being laid. When all three are in working order, the old post will be almost completely converted to the use of gas for kitchens and baths and for every other purpose.

Ten sections of big solid-top and open-back Garland hotel ranges are to be installed in the main kitchen, replacing ten sections of Government coal ranges. Two ranges at one end will be equipped with "Salamander" broiler attachments, the ranges standing back to back.

Two 200-gallon Ruud storage heaters connected with two 300-gallon tanks already have been installed in this kitchen, replacing the water-backs of the coal ranges. A five horsepower Ofeldt steam boiler is being installed for the cooking of vegetables in steam-jacketed kettles. Four large "baker's fryers," made by the Eclipse Fuel & Engineering Company, for stock pot work, add another convenience. And a twelve-foot stretch of cake

griddles completes the equipment. The automatic dishwashers are operated, of course, with gas.

No meter is available big enough to measure the flow of gas to this one kitchen alone in the post. Two of the biggest will be required.

Another installation is of two Garland hotel ranges in the kitchen serving the officers' wards, together with cake griddles and waffle irons and a 200-gallon Ruud storage water heater.

A further big load is called for by a steam sterilizing plant in the operating pavilion.

Another is in the eleven light-diet kitchens of the convalescent wards.

"Every new installation in the post becomes a gas installation as a matter of course, so well have we won the hospital authorities with our service," says Mr. Morehead. "And we are encountering few difficulties now in converting coal installations to gas."

Mr. Morehead adds that only one highly appreciable feature of the Fort McPherson business is its smoothness. A military personnel, trained in gas service, makes daily inspections of all appliances and keeps them in perfect order.

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## No Duty of Inspection Rests Upon Employer in Supplying Simple Tools

**Is Obligated, However, to Furnish Reasonably Safe Tools and Appliances, but Where Workman Is Given Time Previously Duty of Inspection Rests with Him**

It is a fundamental rule of the common law that the employer is bound to furnish the workman with a safe place in which to work and with reasonably safe tools and appliances. But there is a rule, known as the "simple tool rule," which does not hold the employer liable if such tools as are furnished are suitable for the work done, nor is the employer bound to inspect them to discover such defects, declares Chesla C. Sherlock in an article in *Iron Age*.

### The Basic Legal Aspect

This apparent conflict in the law is based upon the assumption that the employer is not bound to discover something which is understood by all and noticeable to all. A simple tool is so well known to all and its use so well understood that the employer cannot be charged with any defect in them, so long as such tools are of the "simple" class.

In Arkansas the rule was applied, when the court held that injuries caused by a workman striking two hatchets together so that a piece of steel chipped off and lodged in his eye could not be charged to the employer.

### When Inspection Is Prescribed

A workman in Colorado was straightening the rim of a kettle with a hammer, and was injured by a piece of the hammer breaking off and lodging in his eye. It was claimed that the defendant company through its foreman negligently and carelessly ordered and directed the plaintiff to lay aside a wooden hammer which he had previously been using and use in its place a steel hammer, thereby causing him to use one steel hammer against another in the straightening of the rim. It was held by the court that it was unlikely that this special order could change the established method of doing the work, and that the employer was not liable.

In a Kentucky case a workman was injured by a spike maul and claw bar, the employer being held not liable, "as plaintiff's own evidence showed that he knew the condition of the claw bar and, so knowing, made the stroke which resulted in the injury to himself, the fact must be given the same effect as if the duty of inspection had rested upon him; that in any event there was no duty of inspection upon the part of the master, and consequently no negligence."

The rule was applied in a Louisiana case, where it was shown that a sledgehammer had been supplied to a workman and that its only defect was that it was heavier than was necessary for the work to be done.

An employer in a Maine case was held not bound to inspect a cold chisel which was used to cut off rivets, and therefore not liable to a servant who was injured by a piece of steel which broke from the head of the chisel when he struck it, and flew in his eye. The plaintiff was working with another workman, one holding the chisel and the other striking it with the hammer and then reversing.

The court held that it was not the duty of the employer to warn workmen against the danger of flying chips of steel or iron, in view of their experience and intelligence. It was further held that the duty of the employer was not changed by the fact that a committee of workmen had waited on the employer and complained to him of the defective condition of the tools and appliances, including the chisel, but no particular defect had been pointed out. Since it did not appear that any particular defect had been brought to the employer's attention, or that he had promised to repair the tools, his ordinary liability under the simple tool rule was not changed; hence he was not liable.

### Simple Tools

In a Tennessee case a cleaver having a sharp edge and a hammer head was used by workmen in cutting iron rods. It was a simple tool, in the opinion of the court, so that the employer could not be liable for injuries resulting from the cleaver flying from its handle when used by another workman and striking the plaintiff.

It was shown to be an ordinary rule in the shop not to fasten the handle of the cleaver tightly because of the difficulty in removing it when the cleaver was to be sharpened. Although it was not necessary to use the cleaver as a hammer, the workmen frequently did use it in this manner after the cutting was done in knocking the piece of metal apart, and this was done under the eye of the vice-principal, who raised no objection.

In Wisconsin it has been held that a hatchet and a maul are simple tools.

The simple tool rule is invariably applied in cases of injury to workmen resulting from the use of simple tools. This means that no matter how the injury may arise, the employer, under the common law, cannot be held responsible for it if the injury was due to the use of simple tools.

In a Texas case a workman was injured by a piece of iron flying off a hammer used by another workman. The court stated that it was a correct proposition that a simple tool, like a hammer or a nail, does not impose upon the employer the duty of inspection, but added

that the question in this case is whether the employer used ordinary care in furnishing safe appliances under the circumstances of the case for the work to be done.

The simple tool rule, however, is not always strictly applied to all cases. It was not applied in a Missouri case where a workman was injured by a flying piece of metal which came off the battered end of a chisel, striking him in the eye and practically destroying the sight.

It was held by the court that the plaintiff was not handling any of the instruments being used in the work, and that he was performing a service apart from the operation of the tools. It is worth while to note that in this case the workman was injured by a chip flying from a tool in the hands of another workman.

### Exceptions

There are some exceptions to the rule which employers can well afford to consider, for in these exceptions do the courts almost uniformly permit recovery against them, even though the agency of the accident be a simple tool.

In the first place, if the employer knows of a defect in a tool which he furnishes to a workman, and the workman does not know of it, the employer is liable for any injuries resulting.

It is the duty of the employer to exercise ordinary care to provide reasonably safe tools and appliances, and it applies to simple as well as complicated tools. The distinction, it should be observed, is in the duty of inspection, the employer owing no duty of inspection in the case of simple tools.

But if the employer had actual knowledge of a defect in a simple tool, and the injured workman had no knowledge, the employer is liable for exposing the workman to a peril unknown to him, and must, of course, respond in damages.

In cases where the workman has directed the attention of the employer to the defective condition of tools, and he has directed the workman to go ahead and use them until they can be replaced or repaired, the question of whether the workman has voluntarily and negligently continued to use said defective tools or appliances is a question of fact for the jury to determine, according to the view of the Oklahoma court.

In Texas it was held that if the workman has had no opportunity in which to inspect a simple tool before using it, the employer will be liable for furnishing him a defective one.

As to just what tools are simple tools, as a matter of law, it is impossible to say. As a rule, however, the expression will be given its ordinary meaning and the courts as a rule so construe it. A simple tool may be said to be any ordinary tool which is not complicated in nature and which is used in simple, ordinary work as distinguished from complicated or intricate work.

Such matters can be determined only by consulting State authorities, as the courts are largely governed by the circumstances surrounding each case and consequently disagree in many specific instances.

It is safe to say that any tool requiring inspection is not a simple tool. A chisel, for instance, which must be carefully inspected and selected in order to perform the intended work, is not a simple tool. The Wisconsin court has said that "furnishing an employee a step-ladder is furnishing him a place whereon to stand. It is a place, or appliance, not a tool."

We have found, then, that employers owe no duty of inspection in the case of simple tools, and that they are not liable for injuries caused when such tools chance to be defective.

We have also found certain classes of exceptions in which the "simple tool rule" does not obtain, and in which the employer becomes liable for injuries sustained.

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## Foreman the Determining Factor in Plant Safety

**Unless He Can Be Reached, Safety Work Must Inevitably Fail —How to Reach Him and Type Worth Reaching**

The workman's attitude toward safety depends absolutely on the attitude of the foreman. If he is indifferent the men will be indifferent. But if he believes in safety, if by what he says and does each day he convinces his men that he is in earnest and is doing everything in his power to protect them, the foreman will get his men with him, declares F. E. Morris, safety engineer of the American Rolling Mill Company, in a safety lecture of the National Safety Council. Just as the corporals more than the captain determine the morale of a military company, so the foremen and sub-foremen determine the spirit of safety in a plant.

Discipline has a place in safety work, but in the long run a foreman must lead his men into safety, not drive them.

### Qualifications of a Safe Foreman

What qualifications must a foreman have to get results in safety? First, he must believe in accident prevention just as he believes in anything else that prevents waste and increases the efficiency of his department. Second, he must really care for his men as human beings, be sincerely interested in their welfare, and feel his moral responsibility to protect them.

He must be a leader, capable of winning the confidence of his men so they will pull with him.

He must know safety—must inform himself, with the assistance of the safety supervisor, regarding the best standards developed in other companies where conditions are similar to those in his own department.

Backbone is one indispensable part of the structure of a safe foreman. When he announces that, beginning to-day, safety is to be first and production second, he must convince his men that he means just that. No mollycoddle ever grew up to be a safe foreman.

Finally, a foreman must be square with his men, and must be sincerely appreciative of every effort or suggestion they make; and he must show his appreciation. In other words, he must win his men to safety.

### What a Foreman Can Do

To get his men intelligently interested in safety, a foreman must keep close to them—must watch their habits, study their jobs, make his men feel that he understands their problems. He must carefully and constantly instruct his men in accident prevention, especially the new men; not simply tell them to "be careful," but warn them in regard to the particular hazards of their jobs and give them specific directions as to the safe methods of work.

A foreman can take a new man and in a few minutes, if he has tact and a friendly attitude, can impress

that man with the fact that here is a shop where everybody is pulling together to keep people from being injured; the company is spending money to make the buildings and machines safe, the foremen are doing their part, and the workmen are doing their part. This gives the new man a splendid start in the right direction.

A foreman should know his department. Through regular inspection and constant daily watchfulness he should know every dangerous place or practice.

The responsibility of seeing that guards are provided for dangerous places should be placed squarely on the foreman, and he should act promptly. Delay often destroys the workmen's confidence in safety. The foreman should see that the guards are kept in repair and are used by the men.

The keeping of tools and machines in proper repair and adjustment is clearly the duty of the foreman. He can render most valuable service to safety by vigilance in this work.

The effectiveness of the first aid department in caring for the men and preventing infection depends largely on the co-operation of the foreman in instructing and disciplining his men. He must make his men understand that minor injuries must receive prompt attention, and must show them why a slight break of the skin, if neglected, may cause blood poison and death.

The success of workmen's inspection committees depends wholly on whether the foreman believes in the committee idea—whether he properly instructs and encourages the committeemen from week to week. Here is where a forman can exert a direct and telling influence for safety.

Departmental meetings of workmen conducted by the foreman once a month have proved most valuable in keeping up interest and enthusiasm in safety. These meetings give the foreman an opportunity to place himself on record as to what he is willing to do to protect his men, and what they should do. The workmen should also be encouraged to talk and a friendly get-together spirit should be fostered.

### The Safety Inspector and the Foremen

If a safety inspector secures the wholehearted support of the foremen he will succeed; if not, he will certainly fail, and nothing can save him. How can an inspector secure this support? First, the inspector must be a "regular fellow"—the kind of a man the foremen instinctively respect. Second, *he must win by the service he renders.* If done in the right spirit, this is bound to win. He must keep in mind always that the foremen are the bosses of their respective departments, and he must work *through* them—never deal directly with the men. The inspector should keep in close touch with the foremen, talk over their accidents, consult with them regarding safety measures, assist them in keeping their accident records, secure for them information regarding guards, etc.—in short, make himself generally useful in any way which will help the foremen to prevent accidents.

From the beginning the inspector should present safety to the foremen as a business proposition—not a frill, but an indispensable part of an efficient shop organization. The records of reductions in accidents and the saving in money of other companies, if presented in simple, graphic form, will do much to make the foremen take safety work seriously.

The inspector should make it a rule to consult the foreman of a department and receive his approval before submitting to higher authorities any recommendation on safety pertaining to that department. Foremen are exactly like all the rest of us. They resent any attempt to impose arbitrary standards; they appreciate being consulted from the start and having a voice. They respond to recognition and courtesy.

Foremen are always interested in what other plants are doing; what some other foreman has actually done with success appeals to them. The mere opinion of the inspector that a certain thing will work does not stir them deeply. The continuous circulation of blueprints and photographs of guards, copies of bulletins and posters, outlines of successful schemes to reach the workmen, gathered from the experience of other companies, will do much to foster confidence in safety and maintain interest and enthusiasm.

Monthly meetings of foremen offer a valuable means of keeping safety uppermost. The superintendent should preside and the safety inspector should act as secretary. The discussion should center around the accident experience of the past month. These meetings give the superintendent a splendid opportunity to show his own interest in safety and what he expects the foremen to do. The inspector also has a chance to describe the progress of accident prevention work throughout the plant and to ask for suggestions.

The inspector should make a graphic chart of accidents each month, by departments, showing comparison with previous records. Many companies post their charts on the bulletin boards and find they stir up a friendly rivalry and spur the foremen to increased vigilance.

When a foreman has done some praiseworthy piece of work or has made a good record in accident reduction, it is a tactful thing for the inspector to mention the fact in a letter to the superintendent and send a copy to the foreman. He will appreciate such recognition; it will make him feel that the inspector is his friend.

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## Stability of American Potash Industry Gravely Imperiled

The present is a critical time for the potash industry recently established in the United States, according to H. S. Gale, of the U. S. Geological Survey, Department of the Interior. Prior to the war this country used more than a million tons (gross weight) of potash salts each year, and it has been supposed that the cutting off of a large part of this supply was a keen deprivation, particularly to the farmer, by whom it was used for fertilizer. This foreign supply has not been available during the war, and with much energy and enthusiasm a domestic production equivalent to about one-fourth the former importation has been built up. Now, however, it is unexpectedly disclosed that there is little or no market for potash either at the high prices that have prevailed or even at a considerably lower price. No satisfactory explanation of this situation seems to be offered.

Approximately 100,000 tons (gross weight) of potash salts produced in Nebraska in 1918 are reported as lying in storage warehouses distributed throughout the Southeastern States, which is the region where potash is principally consumed. This is of the same quality that was used in 1917 and is immedi-

ately available to the fertilizer manufacturer or the farmer. Potash of other sorts from various sources is also reported unsold, though in smaller quantities. As this surplus represents approximately half the relatively small domestic production, and as potash from foreign sources has not been available during the year, it is difficult to explain this apparent lack of interest in the present small domestic supply.

There is a good deal of discussion about present sources and production of potash, and apparently some confusion in the use of the terms by which this production is expressed. The following is therefore a brief summary of the situation based on the latest available data. The statistics for the year 1918 are not yet complete.

Potash is a term commonly used in referring to the miscellaneous materials carrying potassium which are used or valued chiefly for the potassium contained in them. In 1913, the last year before the war, there was imported into the United States 1,092,588 short tons (gross weight) of the miscellaneous potash-bearing materials, equivalent to 270,720 short tons of "pure" or "actual" potash. This includes the figures for the following salts: Kainite, manure salts, chloride (muriate), sulphate, bicarbonate, bitartrate (argol), bitartrate (cream of tartar), carbonate (crude, crude black salts, and refined), caustic, chlorate, chromate, bichromate, ferrocyanide (yellow prussiate), ferricyanide (red prussiate), iodide, nitrate (saltpeter, crude and refined), permanganate, and Rochelle salts.

Since 1913 the imports of these substances have greatly decreased, until during 1916 and 1917 the total gross weight of potash salts imported was only about 25,000 short tons, containing about 8,000 tons of "actual" potash. By far the greater part of potash formerly imported came from Germany, but some of the substances named in the list have come from other places and were received during the war.

During the war period the United States has gradually built up an independent production of potash. According to the latest complete summary of the state of this industry, the principal sources and present rate of production in the United States are as follows:

1. Nebraska: Brine obtained from alkali lakes in the western part of Nebraska has thus far yielded the largest production of potash made in any single district. These deposits appear to be small and they have not been regarded as holding very large reserves for the future, but late reports indicate that larger stores of potash-rich brines exist below the surface than has heretofore been assumed.

These deposits are now reported to be producing at the rate of 600 tons (gross weight) of potash salts a day, which is 219,000 tons a year, equivalent to approximately 50,000 tons of "actual" potash. This district produced 43,219 tons (gross weight) of potash salts, equivalent to 10,232 tons of "actual" potash, in the first six months of 1918, these being the latest statistics of production now available.

2. Searles Lake, California: Searles Lake, in California, is a large deposit of mixed salts containing a somewhat complex brine that is unusually rich in potash. Estimates of the amount of recoverable potash in this deposit indicate that it contains enough to supply the entire needs of the country for at least eighty years. This deposit is now yielding a substantial part of the country's supply of potash from lands that were but recently unutilized public lands. The deposit has now been subdivided by the Secretary of the Interior into a number of leaseholds, under authority of the potash-leasing law enacted October 2, 1917, and a much larger production may be expected. At present this deposit is yielding about 4,000 tons (gross weight) of potash salts monthly, equivalent to about 2,000 tons of "actual" potash. About 14,000 tons of salts, equivalent to 5,000 tons of "actual" potash, was produced from this deposit during the first half of the year 1918.

3. Kelp. Next to the brines, of which the principal sources of present production have already been named, kelp yielded the largest output made by any single source or district. At the close of 1918 the larger kelp-potash plants had already ceased operation, and this branch of the potash industry will probably not survive a considerable reduction in the price of potash. However, during the first six months of 1918 there was produced from kelp 6,512 short tons, gross weight, of potash salts or materials, which was equivalent to 2,412 tons of "actual" potash, which was about 11 per cent of the domestic production of potash during that period.

4. Distillery Wastes. Waste derived from molasses that has been fermented and distilled in the manufacture of industrial alcohol was concentrated and dried, yielding a potash residue in large quantity that is useful for fertilizer. During the first six months of 1918 there was obtained from this source 7,721 short tons of potash fertilizer containing 1,397 tons of "actual" potash. The production from this source was therefore at the rate of about 1,200 tons monthly of crude potash material. This is a by-product from an industry already established and will probably be maintained as long as the price of potash covers the cost of concentrating and drying the waste liquors.

Alunite. Another mineral source is alunite, which is being worked in a deposit in Utah. This is yielding about 20 tons a day of potassium sulphate, equivalent to just about 10 tons of "actual" potash. This constitutes about 5 per cent of the domestic supply.

Miscellaneous. The other sources of potash which have furnished only a small part of the domestic supply include dusts from cement and blast furnaces, Steffens water of beet sugar manufacture, greensands, and leucite and other silicate rocks. The manufacture of crude potash salts by leaching wood ashes has long been an established though proportionately a small industry.

The potash recovered as a by-product from the dusts of cement and blast furnaces bears great promise for future production that may be maintained in the face of competition. It appears that a quantity of potash equivalent to nearly one-third of our normal annual requirements is now going to waste in cement-furnace dusts. The quantity lost in blast furnaces seems even greater, but we are probably not yet in a position to say what part of this is practically recoverable. The cement dust collected in the first six months of 1918 amounted to 5,909 tons, carrying 658 tons of "actual" potash, which was less than 3 per cent of the total domestic production. The recovery from cement dust increased during the latter part of 1918. Blast-furnace dust amounting to 792 tons, equivalent to 79 tons of "actual" potash, was recovered in the same period. Among the potential resources in process of development are the potash-bearing silicates, particularly the leucite rock of Wyoming, the greensands of New Jersey and elsewhere, and the potash-rich slates of Georgia,

such as are found also in other parts of the country. There are vast reserves of these raw materials in this country, the utilization of which depends on the discovery or operation of processes cheap enough to permit production under normal competition with potash derived from other and from foreign sources Many of these projects are of great merit and deserve encouragement. Even if not substantial assistance in carrying out the experimental work is offered to them, at least it is to the interest of the American public that they shall be allowed a fair chance to establish themselves.

Foreign potash cannot be delivered in time to be used for the next season's crops, so that if the present stocks of domestic potash are not sold very soon fertilizers for the spring season will again be made in a form deficient in this essential constituent. This is not only unfortunate to the farmer but may soon be ruinous to the newly established potash industry in this country. The stock in storage represents a capital investment of many million dollars, doubtless incumbered with obligations that must soon be met. The need for reaching some immediate understanding and action is therefore imperative.

# Publications

## Methods of Shutting Off Water in Oil and Gas Wells

Bulletin 163 (Petroleum Technology 46) of the U. S. Bureau of Mines. Paper backs; 9 x 6 in.; 122 pages; illustrations consisting of twenty plates and seven figures from halftones and line drawings. Author, F. B. Tough. Price 30 cents. Obtainable from the Superintendent of Documents, Washington, D. C. Published October, 1918.

The financial losses occasioned by the ingress of water to oil or gas wells are, unhappily, too well known to need a detailed discussion here, although that is exactly what the author of this bulletin proceeds to do before taking up the subject of checking and eliminating the unwelcome fluid. With the thoroughness characteristic of all governmental undertakings, he prefaces his brochure with a lucid description of the various means by which the national beverage-to-be (after June 30) gains access to oil and gas formations, in order that the reader may better understand the remedies explained later on.

We are told that dealing with the water problem may be considered in two separate phases: drilling precautions to prevent the incursion of water into pay strata, and remedying such intrusion after it has commenced. After presenting data on a number of California wells, the writer proceeds to a consideration of ways and means for treatment of water troubles in the California, Mid-Continent and Gulf fields. In the case of the California fields, the topics discussed include a general treatise on the methods and objects of cementing; the dump-bailer cementing process and method of use; cementing plugs, including the "Sure-shot" and the Hall varieties, and their use; the tubing method of cementing and the conditions under which tubing should be used, together with special methods of mixing cement for the Scott cementing outfit; the use of the Baker cement container, and the advantages and disadvantages of the tubing method; the casing method of cementing, including the operation of the two-plug process; how to prepare a well for cementing; the use of packers and how to test a water shut-off; the use of hydraulic lime for shutting off water, including a discussion of the chemical properties of hydraulic lime and the special uses to which it may be put.

Water problems in the Mid-Continent fields are treated in an equally thorough manner, the general conditions prevailing in this part of the country first being taken up. Suggestions for the use of mud fluid and cement are given and for the preparation of mud fluid. A proposed mudding and cementing outfit for Mid-Continent use is described, with costs, and likewise the setting up and operation. We are also told of the McDonald process for cementing off bottom water in oil and gas wells and the use of lead plugs or lead wool for shutting off bottom water in a well.

In overcoming the water evil in the Gulf fields, the necessity for a thorough knowledge of subsurface geology in this region, based on complete well logs, is emphasized. The so-called "Bootleg-packer" system is dealt with and methods are described for plugging off water sand in the bottoms of Gulf field wells. In this connection, the writer believes, among other things, that the insurance against damage to the well and property by leaving the entire water string in is worth many times the interest on the money tied up in the extra string of pipe, and that drilling data should be freely exchanged among neighboring operators. As a whole, this bulletin is exceedingly comprehensive, and deals with a topic which will doubtless be under consideration and discussion as long as there are enough known deposits of oil and gas remaining in the earth to make their development profitable. The Bureau of Mines has repeatedly called attention to the importance of protecting oil and gas sands from the encroachment of water, and the purpose of the bulletin described above is to summarize existing knowledge of methods and devices for the accomplishment of this.

---

Fighting frost with the heat of gas pipes is the scheme proposed by Willis S. Jones, well known Pomona valley citrus grower.

Mr. Jones announced recently that it is the purpose of a number of growers to equip an acre of orange trees with gas heaters, these being arranged in two rows on the north and east, with less in the center and on the south and west. He explained that there is a slight draft of air toward the southwest nearly every night, regardless of the other conditions, except in rare exceptions. By using the gas, Mr. Jones explained, there will be produced two elements desired—humidity for a blanket, and carbonic acid for weight, as well as the actual heat, and it will thus show what can be accomplished by smokeless heaters. This acre is located at the corner of College and Cucamonga Avenues, Pomona, Cal.

Mr. Jones also advocates heating by the community instead of by the individuals. In this manner the entire valley could profit by the natural drift of warm air toward the southwest, that firing could be done with fewer heaters, they being placed at the proper location to utilize the drift

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## As the Journal Views It

### If You Haven't Time to Make Your Windows Attractive Close Them Off

We sometimes stop and gaze into gas-office display windows. All of these windows are more or less intended to promote the use of gas. Oddly enough, to our mind the majority influence to the contrary.

We remember a display of what, in its proper setting, is about as attractive a gas heater as we have. There were several placed haphazard about the window and a few bunches of circulars and cards thrown in to boot.

It would take a very attractive appliance indeed to attract in such a situation.

But nature combined with the carelessness of man to give the attractive features of the heater in this display a black eye.

The window faced to the east, and there was a bright morning sun with nothing to soften its entrance to the windows.

A good part of this heater is a clay composition. Alight in a darkened setting that glowing clay is as appealing a sight on a chilly day as one would care to see. Dead in its proper setting in a fireplace well below the direct vision of the eye and in the semi-obscurity consequent to its location, the clay work is also attractive.

But in this window display it was brought up close to the eye. The brilliant sun, totally unob-

structed, revealed every minute unevenness in the clay work; brought out and magnified every feature that would detract from its appeal to the eye.

The manufacturer of this appliance would have had a just grievance against the gas company fathering this display. Not only did it not enhance the attractiveness of the heater, but in effect actually combined its surroundings so as to make it as forbidding to the eye as its individual attractiveness would permit it to be.

Attractive window displays—this does not mean any window display—have been found profitable undertakings by many gas companies. An unattractive display is promoting competitors' goods. If you haven't the time or the money to make your window attractive, curtain it off. You will find that it pays.

## Why It Takes More Gas to Cook the Same Meal in Winter

We are indebted to James Ferrier in an article in *Here We Are,* the house organ of the Atlanta (Ga.) Gas Light Company for reminding us of a reason for the higher gas bills at the present season that is frequently overlooked by the gas adjuster and seldom explained to the consumer.

It brings to mind an incident that came to our attention.

A consumer was before the complaints counter.

"You know the nights are longer nowadays," the clerk was explaining.

"But we haven't a gas light in the house. We use electricity," retorted the consumer.

The clerk was unabashed.

"You use more hot water in winter than you do in summer," he suggested.

"We have a hot water attachment to our furnace," returned the consumer. "In fact, this should tend to make our present bills lower. Both my wife and I prefer cold water in the summer, but what little we do use is heated by gas. In the winter all our hot water comes from the furnace."

"Well, the gas you use in portable heaters measures up some," urged the clerk desperately.

Despite his vexation the consumer smiled.

"We haven't a portable gas heater in the house," he protested, a trifle more genially.

"Perhaps I have not made myself clear. At this time of the year we use gas only in the cooking range. In the summer we heat a little hot water by gas as well as cook."

The clerk in question was apparently not oversupplied with brains. He was persistent though.

"Changing cooks often cause variations in gas bills," he put forth tentatively.

The consumer's smile became, manifestly, one of impatience. His foot tapped nervously against the floor.

"We've had the same cook for the past ten years," he explained patiently. "My wife."

"Well, maybe the kitchen got cold and she kept the range burning longer than usual for warmth."

"That is not in the least likely. A register from the furnace opens into our kitchen. We have to keep it closed most of the time."

"Well whatever the fault," blurted the clerk somewhat desperately, "It's up to you. The meter we put in at your request last month was tested and checked. Our men find no sign of leakage in your piping."

"Then I am to understand that you have exhausted your last resource?"

The clerk nodded.

"Very well then. I will complain to the Public Service Commission. It is very evident to me that something must be wrong."

Wouldn't this explanation of Mr. Ferrier's—clear even to a layman—have sent this consumer away satisfied.

"It can be readily seen why gas bills should vary even when approximately the same amount of cooking is done. As every housekeeper knows, cooking involves much boiling in water. The temperature of water drawn from the faucet is often 30 deg. less in winter than in summer. A gallon of water weighs about eight and one-third pounds. Now, multiply that by 30 and it is at once evident that it takes 249 more heat units to boil a gallon of water in winter than it does in summer. There are, also, other factors tending to raise the bill. In cold weather more heat is lost by radiation from the sides of the cooking utensil and the colder air flowing to the burner tends to lower the temperature of the flame. Gas of 575 B.t.u. requires about eight feet of air to each foot of gas to complete the combustion. Consideration of these facts might cause our average citizen to be less harsh in his judgments of the gas company."

Can it be possible that there are men at some of our complaint desks who are ignorant of these self-evident facts? Or do they sometimes merely forget?

## Concerning that "Liberty Fuel"

The following is reprinted from *The Empire,* a publication issued by the employees of the Doherty Interests' Empire Companies:

"Liberty Fuel," the much heralded, which, according to its sponsors, was to have superseded gasoline as a motor fuel, has gone the route of its predecessors, the report coming from none other than Mark L. Requa, Federal oil administrator, at whose instigation most rigid tests were made of the possibilities of the new "substitute." That the manufacturers employed first-class press agents must be conceded, for the publicity given the fuel for a time had all the earmarks of being true; but George Ade's motor-boat, the Swan Song, was not long in coming.

When the announcement was first made that a genuine substitute for gasoline had been perfected, refiners and oil men generally were startled, for all alike foresaw the effect of a cheaper and more efficient fuel upon the gasoline market. Later, these same oil men recalled that similar "substitutes" had been discovered from time to time during the past few years, and that in each case the inventor was premature in making public his "achievement."

The recent report of Mr. Requa will put to rest any uneasiness in the minds of refiners, as the administrator's summary of the new fuel is to the effect that it is far inferior to gasoline in every way. The statement only bears out the opinions of the old heads that there will be a stable market for gasoline for many years to come.

This is interesting to us, because some comment has been caused by what was termed the JOURNAL's "failure" to bring this new fuel to the attention of its readers, especially so since one of the devisors, previous to his army experience, was a gas man of some prominence.

We read the first newspaper announcements of the new "discovery" probably as early as any contemporary who made a feature of the fuel. But we were not as ready to take them at their face value. Maybe we flatter ourselves, but somehow we think our readers look to us for a greater degree of sophistication on such matters than they expect from the daily press.

Something told us to question the results obtained by this new fuel, to regard its advent as hardly warranting our making a feature of it. It would be pretentiousness to assign as a reason superior technical depth. But it certainly was not inside information. It might, however, have been sophistication.

We would style it, rather, instinct.

We are glad we did not grab at this "discovery" and play it up.

The gas industry is very much concerned with motor-fuel possibilities. It should know, even if in some cases it does not, a great deal about them.

It should not be in the gullible class in this particular. Its attitude towards new "discoveries" in the way of motor fuels should be one of askance.

A gas journal grabbing on to bubbles of this kind with as much avidity as the daily press is at least undignified. It is a rather sad spectacle in that it is, in a way, a billboard of the industry.

---

## That Deep, Deep Mystery

It is a great mystery to some, and those most mystified are they, who, last winter, ceased merchandising efforts in the futile hope of reducing gas consumption.

To date we have had an unusually mild winter. Yet, strange to many, gas sales are little reduced in comparison to the record outputs of last winter.

Where does it go?

The companies that courageously lived up to their obligations last winter smile up their sleeves. *They know.*

But to the timorous and mistaken being, who relinquished normal profits on appliances, in the height of the demand, that would have done somewhat to make up for the lean profits on the gas, who sat tightly blindfolded during the summer while every conscientious family-head in the land was deluging profits on department stores and "Hole-in-the-wall" dealers for appurtenances they could have sold, we offer this possibility.

Last winter, in the midst of the onset, thousands bought gas heaters that might never have bought them under other circumstances. During the summer thousands more bought them as a precaution.

This winter has given rise to no emergency that the household furnace could not handle. To call in the gas heaters as an auxiliary would have been unnecessary.

But the gas heaters were there. No primary investment had to be made.

People used them in the mild fall chills when usually they would have lighted a wood fire in the furnace, morning and night, to "take the chill off."

The gas heaters sufficed.

Coal fires in furnaces this year were to a very large extent started a month or more later than usual.

Using their gas heaters people came to know them and appreciate them.

Under the conditions that have existed they were not only a convenience, a luxury. They were an economy.

In many homes, oftentimes, the furnace has been allowed to burn out and stay cold for weeks and days at a time. Gas filled in in the interim.

In other homes the furnace has been banked day after day, in most cases the drafts being on a short while each morning and a short while each night. The gas heater filled in in the daytime.

The results of this winter are going to show an unusually low domestic consumption of coal even for a normal winter. They are going to show a gas consumption unusually large for any except an abnormal winter.

The gas companies, who, when the conditions were ripe and the temptation to do otherwise might have been considerable, continued to sell heaters have only themselves to thank for this condition. The gas companies, who lacked a stiffness in the spine and a dearth of common sense, and did not sell heaters at such time, have to thank the assiduity of outside merchandisers who were interested only in the profits on the individual sale and not in the least whether the gas demand should be large or small.

## The Educational Lecture on Gas as a Drawing Card

It seems remarkable that only recently has a realization of the advantage of familiarizing the public not only with the uses of gas, but with the processes of its manufacture and the intricacies of the business as well, has come to the gas industry.

Perhaps this is because we have had our noses too close to the grindstone. It has just been one day's work after another. Failing ourselves to sense the romance, the dramatic, in the conversion of a lump of coal into gas, it never occurred to us that a lecture on gas could be made interesting enough to attract a full audience, or, if this could be done, to contribute anything more than some odd hundreds of additional yawns to the national output.

A few months ago Ralph Elsman, manager of the Kings County Lighting Company, made overtures to the school heads in his territory to get lecturers before the school children. It was in the nature of an experiment, and the effort was, even at so late a day as this, in the nature of an innovation in the American gas industry.

These lecturers spoke on that dry subject gas before hundreds of all degrees of immaturity. To interest and to hold such audiences there must surely be something colorful to be found in gas. The juvenile mind cannot be bribed by promises of uplift and educational value.

And these lectures were a success.

At present the gas company is capping off the effort by a composition contest in which these youngsters will set down on paper what they have learned. Almost a thousand immature Americans in one company's territory evidently know enough about gas and its making to write a story descriptive of it.

Other gas companies have manifested an interest in the possibilities of the educational gas lecture. In seeking to meet the demand for information upon which such companies could form plans, the AMERICAN GAS ENGINEERING JOURNAL at once thought of George W. Allen, who might be termed the pioneer in this class of work on this continent. Mr. Allen was requested to contribute such information and the leading article in this week's issue is the result of the request.

Mr. Allen has been more than a company lecturer. He has been, in a way, a crusader.

A reading of his article suggests that these lecture efforts may well be more than a company matter; in fact, a responsibility of the gas industry as a whole.

There may be in his article a suggestion for the new American Gas Association. If Mr. Allen could of his own efforts secure audiences for his lectures, what could not lecturers of the National Gas Association, with the reflex of its prestige behind them and the aid of its publicity potentialities, not expect?

## Making Unjustified Suspicion Impossible

The rates of most gas companies have been, or should have been, going up during the past few years. In many cases, of necessity, they must continue to go up.

In the gas field—it is a fact, though one would not so surmise from the popular press—there was a decided reluctance towards seeking higher prices for the finished product. So decided, in fact, was this reluctance that the AMERICAN GAS ENGINEERING JOURNAL, so recently that the memory is still fresh, for a time carried on a vigorous campaign editorially against such an attitude. Slowly necessity compelled one company after another to swing into line. There was but one other alternative—bankruptcy.

We do not feel that the time has come yet for the trend to move in the opposite direction. We do not believe the public expect such a speedy reaction from the effects of war.

But here and there may be an isolated situation wherein a reduction is possible. Manifestly where it can be made in accord with sound business it is to the advantage of the gas company to make it.

Such a situation has arisen with the Cambridge Gas Company, of Cambridge, Mass. The relief to the company has been slight—only a trifle in the cost of coal and oil.

But the Cambridge company does not wait for this trifle to become considerable. With a promptitude that contrasts splendidly with its reluctance towards increases, it shares its savings with its public.

The saving to the individual is not going to materially relieve the financial yoke he has been carrying so long that he has come to take it for granted, but the effect of the company's action is going to make it very difficult for future demagogues to challenge the honesty of the company's actions. It is also going to make the skies seem brighter, the future more promising. The decrease is slight, but it is a sign of the break, just as has been recent reductions in foodstuff costs and other necessities. When such signs multiply grown men will begin to whistle again.

The AMERICAN GAS ENGINEERING JOURNAL has had, many times recently, occasion to admire the methods of management employed by the Cambridge company. Here is a company that is worth while to watch. They do many things admirably, and they have achieved results in the confidence of their public.

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## Industrial Gas Masks

The Bureau of Mines is making a preliminary investigation of gas masks with a view to establishing a list of approved devices for use in the mining and allied industries. The bureau will issue a schedule of tests which apparatus must meet in order to gain its approval. Investigations will be conducted at the Pittsburgh station by men intimate with the development of mine rescue apparatus and gas masks used in warfare.

## Gas Send-Out of Atlanta Company Holds High

Whereas a tremendous drop in gas send-out was expected by the Atlanta (Ga.) Gas Light Company because the winter has been so mild in comparison with last winter's rigorous temperatures (with its high cost of coal), nothing of the sort has happened. The present winter's figures on gas send-out keep close up under those of a year ago, which were record-breakers.

## Pomona Branch of Southern Counties Enlarged

The Pomona branch of the Southern Counties Gas Company of California has been enlarged to include the Ontario-Upland district.

The Southern Counties Gas Company has been operating in Ontario and Upland the past year, but it was only recently that the State railroad commission officially endorsed the transfer enabling the Ontario-Upland Company to become a part of the larger system.

Immediately following the change announcement was made that the gas company was preparing to establish a lower rate, or charges similar to those which prevail in Pomona, and F. H. Bivens requested the city attorney to file papers with the State railroad commission seeking a lower rate.

## Boiler Explodes at Plymouth Plant

A low pressure boiler at the plant of the Plymouth (Mass.) Gas Light Company, on Howland Street, exploded Feb. 5 from an unknown cause, injuring James L. Hobbs, 25 years old, an employee of the company. Mr. Hobbs is at the Jordan Hospital, where it is said that his injuries are serious. Another employee was slightly hurt.

The force of the explosion, however, carried the boiler a distance of twelve feet into the adjoining retort room. A piece of the flying iron door of the boiler struck Hobbs, pinning him down so he was not able to escape a cloud of live steam and scalding water.

## Ohio Cities Gas to Issue Stock

B. G. Dawes, president of the Ohio Cities Gas Company, has announced that the directors of the company have authorized the issuance of $9,187,500 additional common stock for the purpose of expanding and extending the company's business.

Common shareholders of record Feb. 15 will be privileged to subscribe to the new stock at $25 a share, to the extent of one-fourth of their holdings on that date. These rights expire Mar. 21, when full payment must be made either at Columbus O., or to the Guaranty Trust Company of New York.

President Dawes declined to outline the extent or nature of the company's intended new business. He said publicity at this time might interfere with consummation of the plans.

## Kansas City Company Pays $17,005.46 to City as 2 Per Cent of Gross Receipts

During the six months ending Dec. 31 the Kansas City Gas Company's gross receipts were $850,272.85, from which the city received 2 per cent, or $17,005.46. A check for that amount from the company was received recently by the city comptroller.

## Atlanta Shop Makes Special Burners

No burners of the required type being in stock, and time not being available to order them from the manufacturer, the gas shops of the Atlanta (Ga.) Gas Light Company recently made for the gas sales department two special burners to operate two 100-gallon vats for a manufacturer of proprietary medicine on Edgewood Avenue.

## Work on Unravelling of Disputed Gas Bills Started in Chicago

The unscrambling of Chicago's gas bills has been started by the special force of examiners from the Illinois public utilities commission, headed by Chief Gas Engineer A. S. B. Little. Mr. Little and three assistants have begun the preliminary investigation of the thousands of disputed gas bills at the offices of the Peoples' Gas Light & Coke Company.

"We expect to have twenty or twenty-five accountants at work on the books in a few days," Mr. Little said. "The gas company officials have promised the fullest co-operation. We will carry on the examination work in the company offices. A large number of the company's own bookkeepers will work with us under the direction of the commission accountant."

It is planned to go over every consumer's account for a period of two years. Every flagrant mistake will receive special consideration and the responsibility for it will be fixed.

A new cause for some of the large gas bills was assigned by the gas company officials when it was learned that many gas consumers have been purchasing "jumbo" burners. They are open-burning gas tips of large size which fairly "eat up" gas, say the engineers.

An exhibition of the waste in gas from the use of these burners was given at the gas company offices. Samuel Insull, chairman of the board of directors, presided. Other officers also were present.

"Gas users should be told of the facts about wasteful burning devices," Mr. Insull told the company employees, after various styles of burners had been exhibited in a darkened room. "Consumers should be warned against peddlers who are selling these 'Jumbo' burners. Their use simply means that the consumers

are cheating themselves out of gas without getting a return in light."

It was shown that the "Jumbo" burner uses seventeen feet of gas an hour with a smaller volume of light than the so-called "Junior" mantle, which burns only two and one-half feet of gas an hour. The ordinary open-gas burner utilizes six feet of gas an hour, the demonstrator for the company said.

"In other words," he said, "if we take 150 hours as a basis we find the 'Jumbo' burner uses 2,500 ft. of gas, costing $2.50, while the smaller mantle uses during the same period 350 ft. of gas costing 39 cents."

"It means," interrupted Mr. Insull, "that the 'Junior' burner at one-sixth of cost gives 50 per cent more light than this 'Jumbo,' which a lot of people are buying in the belief that it will save gas bills."

Inspectors present said that a number of women had informed them that salesmen of "Jumbo" burners had stated that they were representatives of the gas company.

Mr. Insull said that he believed that recent big increase in many of the smaller gas bills may be accounted for by these wasteful burners.

"We found in the case of one consumer, that he was burning three of these wasteful burners," Mr. Insull said.

Fred Abele, city gas supervisor, who attended the exhibition, said his office had warned the public against the "Jumbo" burners.

Mr. Insull said he intended to take steps to try to get the truth about wasteful gas appliances circulated to the gas consumers through the medium of the public schools.

## Calhoun Company Announces Increase Effective Apr. 1

An advance of ten cents per 1,000 ft.—from one dollar to a dollar ten—is announced by the Calhoun Gas Company, Battle Creek, Mich., as scheduled to become effective with the April first billing for March service.

Coupled with the announcement is a scheduled reduction of one dollar per ton in the price of coke, the new price, effective on February, being $9.50 for furnace coke delivered; $9.50 for stove coke delivered, and $9 for nut coke delivered.

It is explained that there has been an unexpected accumulation of coke, due to the mild weather.

"We have been faced by the necessity for an increase in the price of gas for months past," said D. H. Frazer recently. "We have hoped from month to month that the conditions would change, and that the increase could be avoided. The increase now announced was a necessity six months ago—but we hoped then and afterward that we could avoid making it.

"One of two things must result in the gas situation in Battle Creek. Either we must get enough to enable us to make developments and bring the service up to the imperative demands, or we must avoid developments and extensions and must render unsatisfactory service.

## "Should the Gas Company Sell Heaters" Discussed with Consumers of Citizens Company

The Citizens Gas Company, of Indianapolis, following out its policy of frank discussions with its patrons, has just issued a statement on "Should the Gas Company Sell Heaters," which is interesting and given in part:

It is the policy of all gas companies to sell all kinds of gas appliances.

No gas company finds its appliance business profitable. Rarely, if ever, can the appliance department make both ends meet.

The gas companies sell appliances for the following reasons only—

1. To increase the consumption of gas by showing people how to use it.

2. To prevent the waste of gas by inducing consumers to use the best appliances obtainable.

3. To reduce the trouble and expense to the company of responding to the consumers' complaints on account of bad service due to faulty appliances.

Many appliances would not be brought to the attention of the public if the gas companies did not handle them. Many appliances are wasteful and gas waste ultimately discourages the users and thus reduces their consumption of gas. The best appliances are far from perfect, and gas companies are constantly bringing pressure to bear on manufacturers to secure improvements. Many appliances get out of order easily, and even if they do not become dangerous, they may require frequent adjustment.

While gas companies usually sell a great many appliances of all sorts, and practically all of those for which there is limited sale, they seldom sell all of the appliances used in a community. Especially are cooking and heating appliances sold by merchants. Many of these are of excellent types, but some cause a great deal of trouble—and much of this trouble falls on the gas company which had nothing to do with the sales.

If gas is to be used at all, the customers of the gas companies must be able to obtain gas appliances.

The gas company in Indianapolis withdrew all heating appliances from sale last winter, but there were still many on the market. Sales of heaters were made by the gas company last summer in exceptional cases, but always with the statement that a supply of gas for heating purposes will not be available under present conditions. More recently the gas company has been selling an exceptionally economical heater but only to replace old heaters.

Under normal conditions it is highly desirable that the gas company should sell heating appliances. They are a useful and legitimate part of household equipment. Even under abnormal fuel conditions, the most excessive use of gas for heating purposes is with gas ranges and not with gas heaters. The presence of heaters in the homes undoubtedly swells the consumption greatly, but the most wasteful use of gas has been with gas ranges used as heaters.

## Notice Given to Fremont Council that Company Must Have Increase

Notice was given at the city council meeting recently by the Fremont (Neb.) Gas Company that it must have an increase in rates, amounting to about 12 per cent. A year ago the company was denied the right to raise its rates, but at the same time suit to compel lowering the rates, which was at that time pending, was dropped.

## Greensburg, Ind., Rates Increased

The public service commission of Indiana has just granted authority to the Muddy Fork Gas Company, a natural gas concern, to increase its rates at Greensburg, Ind. The primary rate will be increased from 20 cents per 1,000 cu. ft. to 30 cents per 1,000 cu. ft. The rates are to become effective at once.

## Pre-War Free Extension Rules Re-established in Illinois

The Illinois Public Utilities Commission, Feb. 4, re-established the rules in force before the war governing extensions of gas service to new consumers. This order requires gas companies to make free extensions of a hundred feet or less.

## Boston Company's Gas Output

The January output of the Boston Consolidated Gas Company was 613,967,000 cu. ft., an increase of 4.6 per cent over the corresponding month of 1918.

## Quarterly Franchise Tax of $2,167.68 Paid by Pawtucket Company

City Treasurer Reilley is in receipt of a check from the Pawtucket (R. I.) Gas Company for its franchise tax due the city for the quarter ending Dec. 31, 1918. The amount of the check was $2,167.68, which is 2 per cent of the company's gross earnings, $108,384.28, for the period named.

## Plans Completed for Coal Gas Plant at Sandusky

On Jan. 27 the Sandusky Gas & Electric Company was granted an ordinance for the supplying of artificial gas in Sandusky, Ohio.

The original supply in Sandusky was artificial gas, but this was discontinued several years ago when natural gas took its place, the Sandusky company securing its supply of natural gas from the Logan Gas Company.

In recent years the supply of natural gas has been diminishing to such an extent that Sandusky was unable to secure sufficient gas to supply the requirements of manufacturers and other users. It therefore became necessary during the winter months to discontinue the supply to some of the largest customers, and the discontinuance seriously affected the earnings of the Sandusky company during the greater part of the year. Several months ago the Logan company officially notified the Sandusky company that it would soon be obliged to entirely discontinue the supplying of natural gas.

The original artificial gas plant of the company, although maintained during the natural gas period, is much too small in capacity for the present demand, and steps have been taken to rebuild and enlarge the plant. In the meantime the new gas ordinance has been granted, which stipulated that the price of manufactured gas should start at a fixed amount, and increase or decrease, varying with the cost of manufacture, which is dependent upon the price of coal, etc. This safeguards the interests of the public and the company in Sandusky. The fair spirit shown by the company was evidenced in all the negotiations, was met by the public, and the ordinance promptly granted.

Plans have been already completed for a large coal gas plant, upon the enlarged site of the present water gas plant. The company will begin construction at once, taking advantage of the receding prices of material, and will have the same in operation when the time arrives for the discontinuing of the natural gas. This change will assure Sandusky of a permanent supply of gas throughout the year, and will stabilize the earnings of the company, which heretofore, have fluctuated with the supply of natural gas, which has been dependent upon weather conditions.

## Bill Passed in Indiana for Protection of Lives and Health of Employees from Noxious Gases

### Requires Guarding of Gas Valves and Supplying of Gas Masks

The house of representatives of the seventy-first General Assembly in Indiana, has just passed a bill, introduced by Representative Clark McKinley, of Muncie, Ind., which would provide for "the protection of the lives and health of workmen from noxious gases during the course of their employment, and requiring the guarding of gas valves and the supplying of gas masks."

The bill was considered by the house committee on labor and reported favorably, afterward being passed by a vote of 86 "ayes" and no "noes." The bill is of interest to the gas industry. Its provisions are as follows:

Section 1. Be it enacted by the General Assembly of the State of Indiana, That whenever, in the course of their duties or employment, workmen are required to carry on their work in any enclosed room, apartment, building, basement or other structure or other enclosure, not wholly in the open air, and in which any gas valve is located from which dangerous, noxious or deleterious gases may escape, or in which enclosure there may be accumulations of dangerous, noxious or deleterious gases, it shall be the duty of the person, firm or corporation for whom work is being performed to keep a guard stationed at such gas valve continuously while such work is in progress to see that such valve is not purposely or inadvertently opened and to warn such workmen in case of the leakage of gas from such valve in sufficient quantities to be injurious or dangerous to human life; and to supply such workmen with serviceable gas masks to be worn while such work is being performed.

Section 2. Any person, firm or corporation who shall fail or refuse to comply with the provisions of section 1 of this act shall be deemed guilty of a misdemeanor and upon conviction thereof shall be fined in any sum not less than fifty dollars ($50) nor more than five hundred dollars ($500). It shall be the duty of the industrial board to execute and administer the provisions of this act.

## Bank President Claims Chicago Business Men Fail to Back Efforts of Public Utilities to Secure Living Rates

A. W. Harris, president of the Harris Trust & Savings Bank, charged Chicago business men with failing to back efforts of the Peoples Gas Light & Coke Company and other public utilities companies to secure living rates.

"It strikes me as peculiar that business men generally don't see the equity of supporting the gas and other utility companies in the latter's efforts to secure more revenue," he said. "All other lines of business, it is granted, must raise prices if they are to live nowadays, yet gas, street railway, steam railroads and all similar forms of semi-public utilities are denied the right of living.

"The chambers of commerce and associations of commerce of Chicago and other cities get together every so often and discuss the welfare of all the members. This means the prosperity of the community and a proper support of all business. All efforts are bent toward bringing people to Chicago, having them trade here, in-

creasing our population and otherwise promoting general business interests.

"At the same time these same business men single out one of their members—some public utilities company, to be black-balled—that is, they decree that some one member must not be allowed to make a living.

"These public utilities companies, gas companies in particular, are like a dying man—if they cannot get relief they must die—yet the business interests are willing to allow this death simply because there was a contract that prevented the dying man being given more than a certain per cent of food per day.

"Our business associations can easily get at the facts of the income and outgo of these public utilities companies and once convinced of the justice of their contentions, they should stand behind them."

## Select Your Future Technical Men from Men Now Leaving the Service of Uncle Sam

For the first time in the history of America's development employers have an opportunity of selecting from a large and varied list of highly educated and experienced men those individuals especially equipped to meet their particular requirements.

Engineers, executives, men of college training and practical experience in business and technical fields are now being released from the Army, Navy and war work. The professional and special section of the U. S. Employment Service, a branch of the Department of Labor, has been organized for the benefit of employers in need of these men. The service is entirely free of charge.

The organization already has thousands of well-educated, experienced men on its lists and is daily placing many of them in touch with employers. I. W. Litchfield, the head of the professional and special section, was one of the organizers and directors of the U. S. Public Service Reserve, which supplied high-grade engineers and business men to the Government for war work.

The U. S. Employment Service is now divided into two great zones for the purposes of the professional and special section. The New York office, headquarters for the Eastern zone, at 16 East 42d Street, is in charge of the following States: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Ohio, Maryland, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida and Alabama.

The Chicago office, headquarters for the central zone, at 63 East Adams Street, is in charge of all remaining States. Later zone offices will be established to take charge of part of the territory now in the Chicago zone.

The U. S. Employment Service is now represented in each of the forty-eight States by a head office under the immediate jurisdiction of the Federal director for that State. All local community labor boards are responsible directly to the Federal director in their work of placing skilled and unskilled labor. The office of the Federal director is particularly charged, however, in filling requisitions from employers for the highest type of business, professional and technical men. This class of men are registered only in the professional and special section. In case the office of the Federal director for a particular State cannot supply the high-grade man required by an employer, the requisition for that man is forwarded at once to the zone office to which that State is responsible. Likewise, the applications of men qualified for important positions are forwarded through the same channels.

The zone offices at New York and Chicago have therefore become clearing houses for their respective parts of the nation where returning men are classified in accordance with their qualifications and where the requisitions of employers are matched against them. So complete is the system of classification and so diverse the qualifications of the thousands of applicants that the most exacting requirements of an employer, as stated in his requisition, can be met in each detail. When the qualifications of a man and the specifications for a position are accurately matched, the man and employer are immediately placed in touch with each other by the professional and special section.

The United Engineering Societies, composed of the four great engineering organizations—The American Society of Mechanical Engineers, the American Society of Civil Engineers, The American Institute of Electrical Engineers and the American Institute of Mining Engineers—are now co-operating with the professional and special section in placing men in the engineering professions. The high standards maintained both by the Government organization and by the societies have proved to be of the utmost benefit to employers as well as to experienced engineers seeking employment.

In the event that the New York City Employment Bureau at the national offices of the societies cannot supply a man meeting an employer's requirements, the employer's requisition is at once referred to the professional and special section, where thousands of graduates of engineering colleges and men of practical experience are being matched against employers' demands.

One branch of the professional and special section has been organized for the registration and placement of teachers. At present this branch is operating in the head office of each State under the management of the Federal directors, and whenever necessary both positions and applications are cleared to the zone office.

The interests of women fit for high-grade business, technical and professional positions are cared for by another branch which is administered by experienced professional women. In order to register in the women's branch, an applicant must be either a college graduate or experienced in some particular line of executive or administrative work.

The types of men and women registered in the professional and special section is indicated by the following partial list: statistical workers, stenographers, typists, clerks, accountants, advertising and publicity workers, agricultural experts, artists, auditors, bacteriologists, bankers and brokers, biologists, chemists, chemical engineers, cost experts, credit managers, dentists, draftsmen, editors and journalists, electrical engineers, executives, general managers, household economic experts, industrial engineers, lawyers, librarians, mechanical engineers, metallurgists, mining engineers, nurses, office managers, pharmacists, physicians and surgeons, production managers, purchasing agents, real estate and insurance workers, refrigerating engineers, safety engineers, sales managers and salesmen, secretaries and correspondents, social, civil and religious workers, superintendents, surveyors, teachers, traffic managers, works managers and inexperienced college graduates.

The employer should at once get in touch with the office of the Federal director in his State or write direct to either the New York or Chicago zone offices. It is important that the employer give complete and specific details of the position to be filled, together with the maximum and minimum salary he is willing to pay. These details are regarded as confidential by the Government and are withheld from the applicant.

Once introduced to each other, the employer and applicant are left to work out details. Often a number of applicants with equally good qualifications are referred to the same employer in order that he may decide for himself on a basis of their personalities.

The New York and Chicago zone offices are now placing men in positions at salaries ranging from $1,000 to $15,000.

## Prizes Offered to School Children for Best Essays on "The Use of Gas in the Home"

### Visit Plant and Make Inspection Under Direction of Engineer

Eight hundred school children are writing essays in an endeavor to win prizes offered by Ralph Elsman, general manager of the Kings County Lighting Company, for the best compositions on "The Use of Gas in the Home." All of the public schools in the district supplied by the Kings County Lighting Company, which includes Bath Beach, Borough Park, Bay Ridge, Fort Hamilton, Midwood and Parkville, are represented in the contest, and it is expected that it will be of great help in the domestic science courses which are now such a feature in daily instructions.

Parties of boys and girls have visited the works of the company at 55th Street and First Avenue and have made a complete inspection under the direction of Robert Bogie, engineer, who also has given them a short talk on gas. After the visits have been completed by all of the schools, the pupils will be called upon to write the compositions. Judging from the interest displayed by the pupils there will be a lively competition on hand when the contest actually begins. The nature of the prizes to be awarded, one for each school, will be decided by the principal of the school, who will also act as a member on the committee of judges for deciding on the merits of the compositions from each school. The other members on the committee are Eugene C. Miles, editor of the AMERICAN GAS ENGINEERING JOURNAL, and Ralph Elsman, general manager of the Kings County Lighting Company.

"The contest has been started with the idea in mind of letting the coming generation have a definite knowledge on gas so that its mysteries will be removed, and the men and women of to-morrow will understand just what its necessity is composed of," said Mr. Elsman.

"The essay contest is only a portion of the educational program which my company has outlined, and it is our hope that the interest displayed by the children will be equalled by that of their parents.

As quickly as the compositions have been completed I have in mind to start another feature which I believe will prove of real value to the consumers of gas, in increasing the efficiency of the use of our product in the home as well as in helping in the conservation movement which is generally acknowledged to be necessary for many years to come."

## Two Bills Introduced in Missouri Legislature to Deprive Commission of Control Over Utilities

Two bills the purpose of which is to deprive the Public Utilities Commission of Missouri of control over utilities in any city that chooses to take that control away, were introduced in the Missouri legislature last week. The proposed measures are even more drastic than was at first supposed.

One of the bills, introduced by Representative Hugh K. Wagner, of St. Louis, at the request of R. S. Robinson, city attorney of Sedalia, Mo., not only would prevent the commission from issuing any order affecting a franchise or contract between a municipality and a public utility without the consent of the municipality, but also would take away from the commission the power to fix rates of any utility which has no franchise, or whose franchise has expired or which is municipally owned.

The measure provides that no certificate of necessity or public convenience shall be necessary from the State commission to enable any municipality to buy, construct, operate or sell any utility.

## Cheaper Gas in Cambridge

By vote of the directors of the Cambridge (Mass.) Gas Light Company at a recent meeting, the price of gas to consumers will be reduced from $1.15 per 1,000 cu. ft. to $1.10 per 1,000 cu. ft. The new rate will take effect beginning April 1.


# Reduction in Price of Gas

BECAUSE of substantial increases in prices of Labor, Coal, Oil and other materials, the Directors of the Cambridge Gas-Light Company felt compelled to make, and did make, an advance in the price of Gas of twenty-five cents (25c) per thousand cubic feet, taking effect July 1, 1918, and at that time they *publicly made this statement and this promise to the gas consumers:*

> "For many years it has been our policy to reduce the price of gas from time to time as fast as conditions warranted, as shown by our record for the past twenty-five years previous to 1912, during which period reductions, wholly voluntary, were made from $1.60 to 80 cents; and public assurance is now given that the same policy will be resumed as soon and as fast as conditions may justify."

The signing of the armistice has given **some relief in the cost of coal and oil,** which could not have been expected or foreseen, but there **has not been any decrease in labor costs,** nor is any to be expected in the near future. Nevertheless, under the conditions existing at the present time we feel we are justified in resuming **our well established policy of VOLUNTARY REDUCTIONS,** and, **pursuant to published promise,** have voted to make a **reduction of five cents (5c) per thousand cubic feet** on **all bills rendered after April 1, 1919.**

The Bills will be rendered at $1.20 per thousand cubic feet with a discount of ten cents (10c) per thousand cubic feet, if paid within the discount period named thereon, thus making the net price of gas after April 1, 1919, **$1.10 per thousand cubic feet,** instead of $1.15 per thousand cubic feet as at present charged.

While costs and future conditions are still more or less uncertain, and we may yet find we have acted too hastily, we **reaffirm our former promise,** thus far made good, to **make further reductions "as soon and as fast as conditions may justify."**

**Cambridge Gas-Light Company**

ALBERT M. BARNES, President

## Indiana Commission Issues Statement Regarding B.t.u. Tests Now Being Conducted at Four Different Plants

The public service commission of Indiana has just made public a statement, relative to the intense investigation that is being carried on in Indiana relative to the suggested change in the 600 B.t.u. standard for heat units that was adopted several years ago by the former personnel of the commission and since has been in effect in Indiana, regardless of the fact that war emergencies, such as possibility to obtain good grades of coal for gas-making, have made it increasingly hard for Indiana gas companies even to approximate a 500 B.t.u. standard.

The statement was based on a report from Harry O. Garman, chief engineer of the commission, who is one of the leaders in the big investigation as to proper heat unit standards for the commission to adopt. In his report, Mr. Garman pointed out many facts of deep interest to the gas world, and particularly to those interested in gas in Indiana and surrounding States, where the same coal supplies as those available in Indiana are all that could be used under the war emergency conditions.

The work has been going on since the first of February, in so far as actual tests have been concerned. The investigation has just begun to attract the interest of the State at large. The statement from the commission to the general public is reproduced herewith:

"The gas heat standard committee formed at the suggestion of the Indiana public service commission October 10 to make a survey of artificial gas plants in Indiana and then to recommend to the commission a standard heat content for gas sold under commission regulation in Indiana has begun on the first of a series of working tests in four typical gas plants in the State.

"The work has arrived at the stage of making actual tests under actual working conditions in plants. Its progress is being observed with a great deal of interest by Middle West gas manufacturers, State commissions, city officials and also by the United States bureau of standards. The Federal bureau is co-operating also.

"The plant of the United Gas & Electric Company at New Albany was the scene of the first test. It was carried on for a week, the testers on the jobs each hour of the twenty-four in shifts of two men each eight hours. This week the tests were made at the plant of the Northern Indiana Gas & Electric Company at Crawfordsville, next they will be made at the plant of the Huntington Light & Fuel Company, and finally at the plant of the Northern Indiana Gas & Electric Company at Fort Wayne.

"The results of the tests together with data already in the hands of the committee will then be used to formulate a report to the commission on the proper number of B.t.u. to be put into artificial gas. The commission holds that it is not obliged to adopt the standard advised by the committee, but when it makes its own decision from the data submitted it will adopt a standard which is to serve as the basis of regulation of rates and service all over the State.

"Cities will be free, it is advised, to require whatever number of heat units they may desire, but the commission will have a standard to go by as to rates and service. The present standard is 600 B.t.u. per cu. ft. of gas. It is admitted that the standard was only an arbitrary one, and generally companies operating in Indiana have not lived up to it.

"When war time operating conditions made it difficult for gas companies to produce 600 B.t.u. gas in Indiana they began clamoring for a reduction of the required number of heat units with the result that the commission called a conference on the subject.

"Out of the conference evolved the committee which was to investigate and recommend a standard. The committee is composed of H. C. Peffer, professor of chemical engineering, Purdue University, for the Indiana Municipal League; J. B. Klumpp, gas engineer, United Gas Improvement Company, Philadelphia, for the Indiana Gas Association; A. I. Phillips, associate gas engineer for the United States bureau of standards, and H. O. Garman, chief engineer for the Indiana Public Service Comission.

"Each of the committee, with the exception of Mr. Klumpp, is on the testing committee together with A. B. Abbott and A. B. Frankle, staff assistants of the Federal bureau; Frank Hiss, plant engineer at the Lafayette Gas Works; D. W. Hufferd, J. T. Hallett and F. W. Boetel, of the commission's engineering staff; Charles O. Bond, chief of the Philadelphia laboratories of the U. G. I. Company.

"The expense of the tests is being borne by the various organizations interested in the survey and tests. The total expense is not expected to run over $1,900.

"The tests will determine just how good or how poor gas can be produced by Hoosier gas plants with the various kinds of equipment in use and with the various kinds of coal obtainable.

"When the commission finally adopts a standard it is expected that it will base gas prices on the standard and then require gas companies to bill consumers in accordance with the actual degree of compliance with the standard so that if, for instance, gas is to be sold at 60 cents a 1,000 cu. ft. for 580 B.t.u. quality and the quality of the gas falls to but 550 B.t.u., the bill will be reduced proportionately."

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## Citizens Company Discusses Quality of Gas and Yield of Coal in Advertisement

"You cannot make bricks without straw" is the theme of a statement just given to the public in Indianapolis by the Citizens Gas Company, as another chapter in its "tell the folks" campaign.

The statement discusses the quality of coal that has been available during the war period and that is available now with reference to the yield of gas.

The statement followed action by the board of public works of the City of Indianapolis against the gas company, in which it adopted an order providing "that the Citizens Gas Company be penalized $100 a day after five days, if the gas supplied by the company does not conform to the standard prescribed by the company's franchise."

The action opens up the whole question of B.t.u. standards, which has been before the public service commission of Indiana for a long period and which, indications now show, is just about to be solved in a way that will officially answer the many complaints that are being made against Indiana gas companies with relation to lowered heat unit standards during the war period and the present coal situation.

Until the report of the commission is forthcoming, of course, local city governments will be able to harass gas companies constantly because of lack of adherence to franchise requirements and to the requirements of the old order of the public service commission, which set 600 B.t.u. as the State standard, back in the days before a war was dreamed of.

George Lemaux, a member of the Indianapolis board of works, made the motion with relation to the Citizens Gas Company, and in doing so he said: "We have been sitting here a year and have done nothing for the people. It is true that we were handicapped on account of war conditions, but the war is over and the people must get satisfactory service at the hands of public utility corporations. As far as I am concerned I am going to do everything in my power to see to it that the people get service." A similar action was taken by the board with regard to certain matters relating to the local street car system.

## Personal Notes

F. H. MUGG, of the Oklahoma Gas & Electric Company, Oklahoma City, Okla., lectured on the economy of gas in cooking and home use before the economic class of the local high school on Feb. 5.

HOWARD E. MANN, engineer, gas department of The Montreal Light, Heat & Power Company for the past ten years, is returning to the States at the expiration of his contract May 1. During Mr. Mann's connection with the company he redesigned and rebuilt the old Harbour Street Gas Works, modernizing same in all departments and increasing the generating capacity to 6,000,000 cu. ft. coal gas and 6,000,000 cu. ft. water gas per day. The retort house at this plant contains 36 benches sectional silica retorts, which is one of the largest installations in America. Mr. Mann also designed and built the new coal gas plant known as the Ville La Salle works. This plant is located in one of the suburbs of Montreal and is of 10,000,000 cu. ft. coal gas capacity. The plant contains the Glover-West vertical system of continuous carbonization and the most modern coal and coke handling systems and subsidiary equipment. The by-product recovery apparatus was developed from the latest English and European practice, which Mr. Mann personally investigated while abroad.

BERTRAND DIAMOND has recently taken charge of the property of the Norwich (N. Y.) Gas & Electric Company, which is now known as the New York State Gas & Electric Corporation, one of the properties of the J. G. White Corporation of New York. Mr. Diamond was formerly superintendent of the Newfane Electric Company.

A. W. MC LIMONT

A. W. MCLIMONT, general manager of the Winnipeg (Canada) Electric Railway Company, Winnipeg, Manitoba, Canada, which company operates transportation, power and gas utilities, and in connection with all three Mr. McLimont is carrying out an extensive program of construction and improvements.

GEORGE B. WILKINS, formerly president of the Sheboygan Gas Light Company, of Sheboygan, Wis., now commercial manager of the Wisconsin Public Service Company, has been made sales representative of the Illinois Electric Company with headquarters in Chicago.

WILLIAM WALLEN, manager of the Oshkosh (Wis.) Gas Light Company, has tendered his resignation to take effect March 1. Mr. Wallen will take an executive position with the National Fiber Textile Company of Neenah, Wis., a company manufacturing fiber rugs and gunny sacks. He has been in the employ of the Oshkosh company for more than nineteen years and for the last twelve has been manager of the company.

THE WATERBURY (CONN.) GAS LIGHT COMPANY at its recent annual meeting re-elected the officers of the past year for the coming year as follows: President, R. F. Griggs; vice-president, treasurer and general manager, E. H. Williams; clerk, F. E. Gorman.

H. J. SLICKER, of Knox, Pa., was elected president of the Alum Rock Gas Company at the recent annual meeting. He succeeds G. S. Hamm, who died about a month ago.

F. H. HAWKINS was appointed works superintendent of the Plymouth (Mass.) Gas Light Company. He assumed his new duties Dec. 1, 1918.

THE LOS ANGELES (CAL.) GAS & ELECTRIC CORPORATION held its annual meeting of the stockholders recently at the offices of the corporation, No. 645 South Hill Street. No changes occurred in either directorate or officers. The following gentlemen were elected to the board of directors: W. B. Cline, William Baurhyte, William M. Van Dyke, C. S. Vance, C. A. Luckenbach, C. O. G. Miller and A Schilling. The board of directors elected W. B. Cline, president; William Baurhyte, vice-president; C. S. Vance, second vice-president; C. A. Luckenbach, third vice-president; T. P. McCrea, secretary; Horace Cline, treasurer; A. B. Day, general manager.

THE MUSKEGON HEIGHTS (MICH.) GAS COMPANY stockholders met recently at the gas office and elected directors of the company for the ensuing year. The newly elected directors also elected the officers of the company. A. E. Dunn was elected to the chairmanship of the board of directors and the presidency and managership of the company. The directors elected were A. E. Dunn, W. J. Carl, C. B. W. Cunningham, Adam Pyle, Jr., and Frank Holt. The following list of officers was elected: President, A. E. Dunn; vice-president, C. B. W. Cunningham; secretary, Adam Pyle, Jr., and treasurer, Dr. R. I. Busard.

W. W. FLANDERS, formerly manager of the Puget Sound Gas Company, at Everett, Wash., has been appointed general superintendent of the Tacoma Gas & Fuel Company.

J. G. BOURUS, formerly manager of the Olympia Gas Company at Olympia, Wash., has been appointed manager of the Puget Sound Gas Company at Everett, Wash., succeeding W. W. Flanders.

J. F. OWENS, vice-president and general manager of the Oklahoma Gas & Electric Company, has been selected as a member of the Oklahoma City executive committee for the fifth Liberty (Victory) Loan.

DONALD MCDONALD, manager of the Louisville Gas & Electric Company, has been elected president of the Louisville Industrial Foundation for the coming year.

E. H. JACOBS, construction engineer and superintendent of all distribution lines of the Western States Gas & Electric Company at Stockton, California, died of pneumonia on Jan. 16, after having been ill with influenza for about ten days. Mr. Jacobs had been connected with the Western States Company for ten years, and for the last seven years had been located at Stockton.

F. WOODRING was elected a director at a meeting of the board of directors of the Sandusky (Ohio) Gas & Electric Company, to fill the vacancy caused by the death of the late George H. Tuttle.

THE NEEDHAM GAS APPLIANCE COMPANY, formerly of 550 West 25th Street, New York City, manufacturers of the Needham High Pressure Gas Apparatus, has moved to 150 Lafayette Street, where they will have more room to take care of their constantly increasing business.

JOHN T. CLARK has been elected treasurer of the Sandusky (Ohio) Gas & Electric Company, succeeding O. Clement Swenson, resigned.

M. L. KANE has just completed his first year as manager of the gas department of the Winnipeg (Canada) Electric Railway Company. Although only a young man Mr. Kane has already achieved considerable distinction in the gas field of America, and to review his career so far is but to recite a record of accomplishments and promotions which augur well for his future Before coming to Winnipeg Mr. Kane was associated with the Continental Gas & Electric Corporation of Cleveland, Ohio, first as engineer and later in the capacity of promoting and developing properties. Prior to that time he had held the position of engineer with the United Gas Improvement Company, of Philadelphia, and its associated companies. Mr. Kane is a keen and enterprising utility student, and has conducted many researches in the field of labors to which he has so ardently devoted himself. At the present time Mr.

M. L. KANE

Kane is engaged in making a number of tests in connection with recently installed improvements at Winnipeg, and the results of his workings will be made known to readers of this journal in due course. During the past few months over $125,000 has been spent in Mr. Kane's department in improvements and extensions, and during the whole of his association with the company Mr. Kane has both found, and been afforded ample opportunity and scope for his initiative ability and ingenuity. Mr. Kane, therefore, is a keen organization man and fully appreciates the value to be gained through co-operation and association with others in the gas world. He is a member of the American Gas Association, and the Canadian Gas Association, and takes deep interest in the activities of these various organizations.

THE STAMFORD (CONN.) GAS & ELECTRIC COMPANY held the annual meeting of the stockholders recently, at which Walter Ferguson, Charles H. Lounsbury, Edward E. Rowell, Albert J. Hatch, Samuel Pierson, Alfred W. Dater, Schuyler Merritt, Irving E. Raymond, Walter E. Houghton, Walter D. Daskam, Frederick C. Taylor, John H. Goss and Charles O. Miller were elected directors of the company. Following the annual meeting of the stockholders, a meeting of the board of directors was held, at which Walton Ferguson was elected chairman of the board; Alfred W. Dater, president; Charles H. Lounsbury, secretary and assistant treasurer; Walter D. Daskam, treasurer and assistant secretary, and George B. Leland general manager.

THE GRAND RAPIDS (MICH.) GAS LIGHT COMPANY, at its annual meeting recently, re-elected the following officers: President, Emerson McMillin, New York; vice-president and general manager, John T. Young; vice-president, Alanson P. Lathrop, New York; chairman of board, J. Boyd Pantlind; directors, the officers and Thomas J. O'Brien, Lewis H. Withey, Henry Idema, William H. Anderson, Henry Sullivan; secretary, Glenn R. Chamberlain, treasurer, John A. Hulswit; assistant secretary-treasurer, C. N. Jeliffe.

DAVID R. DALY, president and general manager of J. H. Gautier & Company, of Jersey City, N. J., passed away Monday, Feb. 3, at West Milford, N. J., after an illness of almost two years. Mr. Daly was born at Piermont, N. Y., in 1853, coming to Jersey City a small boy. He was educated in the public schools of the city and at Cooper Union, New York. He entered the employ of J. H. Gautier & Company at a young age, and had been connected with the company for over fifty years, being the president and general manager at the time of his death. He was always deeply interested in the administration of the city's affairs and held many public offices. He was at one time president of the Chamber of Commerce, and for several years a director of the Board of Education. He was vice-president of the Hudson County National Bank and a trustee of the Provident Institution for Savings in Jersey City, a director in the Home

of the Homeless and a director of the Old Dominion Steamship Company. He belonged to the Lodge of the Temple No. 110, F. & A. M., and to the Downtown Union League, Palma and Carteret clubs; to the Historical Society of N. J., and also to the American Gas Association, American Institute of Metals, Illuminating Engineering Society, N. Y. Railway Club and the Central Railway Club. Mr. Daly had been associated with the gas industry for more than fifty years.

SIDNEY W. SMITH, for five years connected with the San Diego Consolidated Gas & Electric Company, San Diego, Cal., who enlisted as a motor mechanic in Company 20, 1st Regiment Motor Mechanics, Aviation Section, died at his home on Jan. 13 at San Francisco. Private Smith was invalidated home on account of rheumatism contracted while recovering from scarlet fever, and developed pneumonia in the hospital at San Francisco.

HENRY C. BERGEN, 35 years of age, died in Paterson, N. J., Jan. 15 after a short illness. He had been employed as a meter reader by the Public Service Gas Company for the past nine years.

PATRICK HENRY SHERIDAN died at his home, 135 Calyer Street, Brooklyn, N. Y., Jan. 29, after a brief illness. He was in his thirty-ninth year. He was employed by the Brooklyn Union Gas Company.

## New Superintendent of Government Plant at West Point Successful in Replacing Electric Lights with Gas

Since the appointment of Robert H. Patterson, formerly with the Providence (R. I.) Gas Company, as superintendent of the Government plant at West Point, succeeding Ira N. Goff, who was promoted to a higher position with the Government, 200 gas lights have been placed in one building, necessitating the removal of electric light units.

The success of this installation leading to the installation of gas lights exclusively in this building, and also to the replacement of twelve electric heaters by an equal number of gas heaters.

## Western Gas Construction Company Reorganized and Strengthened

The Western Gas Construction Company, due to the number of inquiries for their product, has decided to establish an Eastern office in New York City, and has appointed J. Alex. Mayers, with offices at 55 William Street, New York, Telephone 4678, as their representative in that territory.

Neither Mr. Mayers nor the company need any introduction to the gas fraternity, the former having been their successful representative some years ago, and is familiar with their well-equipped factory, consisting of boiler shop, foundry and machine shop, which puts them in a position back of their slogan, "Everything for a Gas Plant."

The financial and engineering personnel of this organization has been radically changed during the past two years, and like many other manufacturers, they have been devoting that period to such work as is essential to carrying on the war, such as the manufacture of coke oven machinery and by-product apparatus, and especially toluol apparatus, an important factor in winning the war.

The Western Gas Construction Company is backed by the Koppers Company of Pittsburgh, Pa., and therefore will get the benefit of the expert knowledge in the lines in which these two companies might run parallel in the coal gas business, besides the expert advice of experienced blue and carbureted water gas engineers well known to the gas industry as such.

During past years they have added to and greatly improved their factory facilities and organization. These factors put them in the position that enables them to furnish up-to-date and well-built machinery.

The officers of the company are the same as for the Kopers company.

F. H. Beebe, formerly of the Koppers company is the local manager. C. J. Ramsberg, formerly assistant works engineer of the U. G. I. Company, now vice-president of the Koppers company, will act in a consulting capacity on water gas apparatus.

# Construction Notes

## May Lay New 8-Inch Main at West Point

Following the installation of a new coal-gas bench of sixes at the Government plant at West Point, the construction of an eight-inch main is contemplated to supply gas for twenty new water heaters that have been installed. The existing main is not large enough with the present load to also stand these additional heaters.

It is expected that there will also be an increase in the number of gas appliances installed. The superintendent of this plant is Robert H. Patterson, until last October with the Providence (R. I.) Gas Company.

## Two Gas Benches to Be Built at Stevens Point—Other Improvements Contemplated

The Wisconsin Valley Electric Company, Stevens Point, Wis., is contemplating the erection of two additional coal gas benches and will make other improvements on their plant in the near future.

It is the intention of the company to modernize the plant and make extra efforts during the coming season to increase their load.

## New Gas Line to Oklahoma City Completed

The Oklahoma Natural Gas Company has completed its new high pressure pipe line for the delivery of an additional supply of gas to Oklahoma City, from the Cement Oklahoma field. Gas was turned into the line for distribution by the Oklahoma Gas & Electric Company Jan. 31.

## Tampa Company Laying Mains

The Tampa (Fla.) Gas Company is planning considerable improvements during 1919 and have already started a part of their work planned in Hyde Park, Tampa Heights and Ybor City.

Roscoe Nettles, manager of the

company, recently announced that in Hyde Park they are laying 8 and 12 inch gas mains on Grand Central, between Magnolia and Brevard. In Tampa Heights, on Jefferson Street, between Palm and Michigan Avenues, 8-inch mains are being laid, and in Ybor City, on 12th Street, between 8th Avenue and Michigan Avenue, a 6-inch main is going in.

Mr. Nettles says these improvements, with necessary minor small connections, when completed, will make the gas pressure uniformly good and bring the service up to a standard that will eliminate all reason for complaint.

## Court Decides That Wilputte and Otto Coke Oven Concerns Infringed on Koppers Patent

The United States District Court has sustained the Koppers Cross Regenerative Coke Oven patent in the suit by The Koppers Company of Pittsburgh against the Wilputte Coke Oven Corporation and the Otto Coking Company, builders of "Wilputte Coke Ovens." The decree was entered Jan. 30 and the court's opinion, filed Jan. 18 in the United States District Court at Wilmington, Del., holds that "no other conclusion can be reached than that the patent is a valid patent," and that "the Wilputte oven is so like the Koppers oven that one hesitates to find a difference between them," and that both claims, 1 and 5, sued on 'have been infringed by the defendants.'" The court says that "the conclusion must be reached that the defendants are guilty of infringement of the Koppers patent."

This suit was started a couple of years ago in the United States district court, at Wilmington, Del., and the case was assigned to Judge Charles P. Orr of Pittsburgh after Judge Bradford of Delaware retired from the bench last spring. The argument last June took place in Pittsburgh and occupied several days. Volumes of testimony and many models and other exhibits were submitted to the court, and extensive printed and illustrated briefs were offered by both sides.

The court also dismissed a counter-claim set up by one of the defendants under a new expired patent and held that such other patent "has not been infringed by the plaintiff," and so the whole opinion is in favor of the Koppers Company. In the opinion it is remarked that "over 80 per cent of all by-product coke ovens built within the last ten years in the United States have been Koppers ovens and represent an investment of more than $50,000,000." An injunction has been ordered against the defendants prohibiting them from undertaking to build any more batteries of infringing ovens. H. B. Rust, president of the Koppers Company, states that the court's opinion is so clear and positive he believes that upon any appeal it will stand.

## Massachusetts Gas Earnings

The combined net earnings available for dividends of the subsidiaries of the Massachusetts Gas Company for December were $170,109, an increase of $3,678, or 2.21 per cent, compared with the corresponding 1917 month.

## Earnings of Columbia Gas & Electric Company

Directors of the Columbia Gas & Electric Company held a regular monthly meeting in Cincinnati yesterday, with President A. B. Leach in attendance. The meetings are usually held in New York City. The regular quarterly dividend of 1 per cent, payable Feb. 15, to stockholders of record Jan. 31, was declared. T. F. Wickham, treasurer of the company, submitted the final report for the year and for December. The report showed for 12 months ended December, 1918:

| | | Increase |
|---|---|---|
| Gross earnings | $11,451,862.83 | $590,532.14 |
| Operating expenses and taxes | 5,873,180.38 | 232,643.26 |
| Net operating earnings | 5,578,682.45 | 357,888.88 |
| Other income | 1,969,654.06 | 25,330.56 |
| Total net earnings and other income | 7,548,336.51 | 383,219.44 |
| Lease rentals, etc | 3,636,160.70 | 121,672.15 |
| Fixed charges (Colum. G. & El. Co.) | 713,350.00 | *3,915.59 |
| Surplus | 3,198,825.72 | 265,462.88 |

*Decrease.

For December, 1918

| | | Increase |
|---|---|---|
| Gross earnings | $1,123,844.04 | *$1,242.36 |
| Operating expenses and taxes | 507,102.05 | *76,189.03 |
| Net operating earnings | 616,741.99 | 74,946.67 |
| Other income | 167,755.23 | 2,369.81 |
| Total net earnings and other income | 784,497.22 | 77,316.48 |
| Lease rentals, etc | 294,210.13 | 5,733.08 |
| Fixed charges (Colum. G. & El. Co.) | 59,445.83 | *387.50 |
| Surplus | 430,841.26 | 71,970.90 |

*Decrease.

The Western States Gas & Electric Company reports December gross $162,765, inc., $28,260; net after taxes $71,019, inc. $13,764; surplus after charges $40,081, inc. $10,132; twelve months gross $1,628,995, inc. $226,126; net after taxes $649,615, inc. $15,684; surplus after charges $275,989, dec. $60,566.

The Pacific Gas & Electric Company declared the regular quarterly dividends of $1.50 on the 1st preferred and original preferred stock, both payable Feb. 15 to stock of record Jan. 31.

The Citizens' Gas Light Company, organized Jan. 3 at Calais, Me. Capital stock, $50,000; all common; paid in $30, par value, $10; shares subscribed, three. President, Walter N. Minir, Calais; treasurer, John C. McRaul, Calais; clerk, James M. Beckett; directors, the above. Purposes, a general business in the manufacture and sale of gas.

The Kansas Gas & Electric Light Company earns the interest on its first mortgage bonds more than twice. Last year's gross earnings were $2,055,405, an increase of $300,000 over 1917. More than half of this increase was saved for net, which was $656,587, compared with $486,579 in 1917. Total interest charges were $371,214, about one-third of this being interest on floating debt owed by the company, to the American Power and Light which controls it. The balance after charges covered the dividend on preferred stock more than twice.

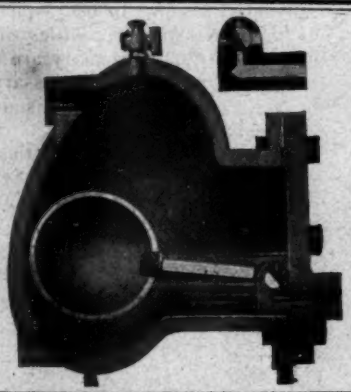
GAS
HOLDERS

# RITER-CONLEY
# —CO.—

# PITTSBURGH

COAL
GAS
PLANTS

## GENERAL STEEL CONSTRUCTION



## CORLISS VALVE STEAM TRAP

**Guaranteed for Two Years' Service Always,**
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Hartford, Conn., 330 Pearl St.
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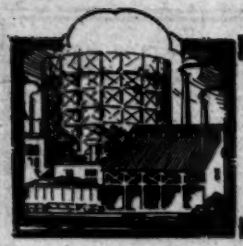
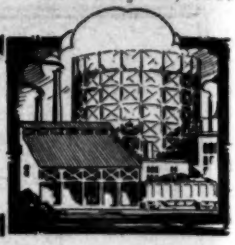
Indianapolis, Ind., 222 Hume-Mansur Bldg.
New Orleans, La., 917 Hennen Bldg.
Boston, Mass., 10 High St.
Detroit, Mich., 814 Penobscot Bldg.
Milwaukee, Wis., 3 Bradley Bldg.
Columbus, Miss., W. F. Vinton
Minneapolis, Minn., Metropolitan Bank Bldg.
Omaha, Neb., 804 First Nat'l Bank Bldg.
Elizabeth, N. J., 122 Elm St.
New York City, N. Y., 6 Church St.
Rochester, N. Y., 305 Chamber of Commerce Bldg.
Troy, N. Y., 422 River St.
Philadelphia, Pa., 1503 Samson St.
Pittsburgh, Pa., 1204 Hartje Bldg.
Havana, Cuba, Cuba No. 3



# With The Equipment & Appliance Manufacturers



**Conducted by Business Department of American Gas Engineering Journal**

## The Use of Proper Brick for Gas Machines Is Important

Gas machines require a special brick to produce the best results. They must be of a composition that will heat entirely throughout. which has been the objection to a regular fire brick. A fire brick is made to resist heat, is very porous, and therefore a slow conductor of heat units, requiring much time to be heated to the centre, and when hot, for the same reason is slow to give off heat.

A checker brick is made to absorb and impart heat units rapidly, being solid and of close texture are quick conductors of heat, and respond instantaneously to the reverse action of the machine on the checker shell.

Fallston Special Checker Brick are made from high grade fire clay, compounded with other refractory materials and burned for thirteen days at 2,200 deg. Fahr., almost but not quite the point of vitrification, under the careful supervision of a ceramic engineer; being machine made, under great pressure, are compact, uniform in size and weight, and are exceptionally straight and clean cut on all edges, smooth surface and less porous than any brick sold for the purpose.

The perfect workmanship of the Fallston Brick assures a perfect checker shell, that will not sag or tumble, maintaining a clear gasway and maximum production.

### Circle Brick

Fallston Special Circle Brick, for lining gas machines, are true to measurement, perfect on all edges, will lay close making narrow joint and requiring very little cement.

In the manufacture of Fallston Circle Brick, particular attention is given to the inner surface being made smooth, hard and abrasive. Clinkers have little chance on this lining, and when accumulated can be knocked off without damage to the structure.

Fallston Circle Brick are made from the same mineral as Fallston Checker Brick, and will therefore give off heat from every square inch of wall surface; materially assisting the work of the Checker Shell.

### Analysis

"Fallston" Fire Clay, fusing point, 3,074 deg. Fahr.

"Fallston" Gas Brick, softening point, 2,777 deg. Fahr.

Size of brick 9 x 4½ x 2½; Weight, 7 pounds each or 3½ tons per 1,000; Minimum car contains 10,000 brick.

Mr. J. Blair Cuthbert, Bourse Building, Philadelphia, Pa., is the sole distributor of these brick and will be glad to send a sample to any gas man on request.

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## Method of Determining the Quantity of Tar Carried by Coal Gas at Different Stages of Condensation

A bulletin No. 35 has been recently issued by the Steere Engineering Company, Detroit, Mich, devoted to tar cameras, for colorimetric tar determination. The problem of making quantitative determination of the suspended matter carried by gases has in the past given no end of trouble.

The Steere Engineering Company method has been worked out for determining the quantity of tar carried by coal gas at the different stages of condensation, and has also been found equally valuable for determining the quantity of suspended matter carried by any gas or the atmosphere. They call this apparatus the "Tar Camera," because of the stain left by the tar taken from the sample of the gas under test.

They do not claim that the "Tar Camera" will eliminate all gas plant trouble, but it does furnish simple means of detecting it and studying its causes.

In plants subject to naphthalene trouble, it is especially important that a close watch be kept on the quantity of light tars carried into the ammonia scrubber. These tars are saturated with naphthalene when they enter the ammonia scrubber and come in contact with the ammoniacal scrubbing liquor. Phenols are dissolved out of the tars by the ammonia, forming salts more soluble in water than the phenols. Phenols are very good solvents of naphthalene. The inevitable result, therefore, when phenols are dissolved out of the tar, is to supersaturate the gas with the naphthalene set free.

This is the reason that gas tested after the ammonia scrubber shows more naphthalene than gas entering the scrubber.

The answer is to keep the quantity of tar carried by the gas at this point at a minimum.

As a further illustration of the many problems that may be studied by the tar camera, consider the increased life of the purifying sponge if it were not fouled with light tars.

The construction of the tar camera is made entirely of aluminum —including the cock. Aluminum will not corrode or be affected by any of the constituents of the gas.

Where the gas is under pressure, it is only necessary to screw the tar camera into the apparatus at the point to be tested. The outlet of the camera into the apparatus at the meter, or measuring bottles, with rubber tubing.

When the gas is under vacuum, it is usually simplest to use aspirators. If standard aspirator bottles of one or one-half cu. ft. capacity are used, the test meter is not necessary, as the gas is measured as it is drawn into the aspirator.

These same aspirator bottles can also be used in place of the test meter for measuring the gas when it is under pressure.

The bulletin also contains many tables and charts all of which are extremely valuable to the official in charge of manufacture.

The bulletin will be sent to anyone on request.

*ESTABLISHED 1855*

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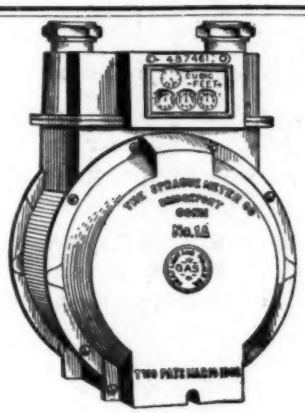

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It is not affected by the constantly varying pressure in the gas or air lines; but gives each appliance a constant supply of the correct mixture at a constant pressure, independent of the varying number of appliances in use.

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A saving of time and increase of production, by eliminating adjustment.

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THE NEEDHAM SYSTEM IS A ONE PIPE, SINGLE VALVE CONTROL METHOD OF APPLICATION, EACH WORKER ACCOMPLISHING EQUAL RESULTS AS THE MOST SKILLED, IMPOSSIBLE WITH TWO VALVE CONTROL.

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